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GARDEN AND FOREST

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Conducted by

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GARDEN AND FOREST.

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The Preservation of Washington's Birthplace.

SOME time ago the sum of \$30,000 was appropriated by Congress for the purchase and preservation of Washington's birthplace. This, as too many Americans may not remember, is a plantation, now called Wakefield, in Westmoreland County, Virginia, bordering for about half a mile on the Potomac, and some sixty-five miles below the city of Washington. Here the first President's great-grandfather, grandfather and father spent most of their lives, and here his own childhood was passed. Nothing now remains of the plain square wooden house, which had only four rooms on its lower floor, excepting the brick foundations, even the chimney having fallen within recent years. The old family burying-ground is in a sadly neglected state, and the whole property, of about twelve hundred acres, is in an unattractive condition. Five thousand dollars were asked for it when Congress decided to purchase it; a landing-pier, making it accessible to the public, will cost some ten thousand more; and it is estimated that, after certain incidental expenses are likewise deducted, not more than thirteen thousand dollars will be left to be applied to desirable commemorative purposes. Commenting upon these facts, the *American Architect and Building News* recently said:

This sum would not go far in providing a monument, or other similar memorial, large enough not to look ridiculous in the middle of so extensive a tract, and, unless the appropriation could be considerably increased, we would suggest that an effective way of using the small sum available would be to spend it, under Mr. Olmsted's direction, in beautifying the plantation by purely natural means. The remains of the house and the family graves should be secured from further decay by proper shelter, but, beyond this, our idea is that the object in view should be to secure, using trees, shrubs and grass as the medium, the utmost possible effect of appropriate sentiment. So far as we know, such an experiment has never been tried on anything but a very small scale. In fact, there are very

few men in the world who could handle trees and shrubs as a painter does his colors, with a knowledge of the effects produced on the mind by their combination, but Mr. Olmsted is one of them, and it is hardly too much to say that an entirely new field of art might be opened by such an essay. The circumstances would be particularly favorable. There is land enough to carry out an idea without having it spoiled by the intrusion of discordant neighboring objects; the Virginia atmosphere has naturally a tender haziness which lends itself to sentiment, and Mr. Olmsted knows the form, color, mode of growth, and, one may say, the expression, of every plant indigenous to that region. There would be no need of changing the topography, or in any way altering the general appearance of the plantation from what it was when Washington's childish eyes looked over it; everything would be done by planting, and a great deal of planting could be done with thirteen thousand dollars, with the additional advantage, that, when the time came for spending a hundred thousand or so on a more artificial memorial, what had already been done would be so much additional attraction to the place, while an insignificant monument would be only fit to be dug up and thrown away.

We are glad to reprint this advice, not only because it is the best which could be given with regard to the special case in view, but because it is a cheering proof that correct ideas as to the relation between monuments of any kind and their surroundings are rapidly gaining ground among members of the architectural profession, where, as we have often said before, their prevalence is especially desirable. It is also a renewed proof of the esteem in which the art of landscape-design is held by the best architects and of the growing spirit of cordiality and co-operation between the two professions.

THIS movement to preserve the birthplace of Washington suggests once more the necessity of general laws for securing and holding property which is worthy of reservation for public use. In this particular instance the Legislature of Virginia can pass an act enabling the General Government to acquire this tract of land in fee-simple, for, without the permission of the Government of a state, the Federal authorities cannot acquire land within its boundaries. But there are places in every state which ought to be preserved on account of their historic associations or their natural beauty, and yet in very few of them has any provision been made by law by which such places can be rescued from destruction. It was by special enactment that New Jersey acquired the beautiful old colonial mansion and grounds at Morristown, where Washington once had his headquarters, and in the same way Pennsylvania secured the camp-ground at Valley Forge. The example of Massachusetts cannot be too often commended for the act incorporating "Trustees of Public Reservations," which enables them to acquire by gift or purchase, and to hold forever, for public use, bits of impressive scenery or places identified with honored names or great deeds. There are public-spirited people all over the country who own beautiful tracts of land which they would be more than willing to have maintained in their original beauty if there was any body with the authority to hold them and the character to ensure a wise guardianship. We cannot too often insist on the value of contact with quiet rural beauty as a refreshment for the people who are crowding into cities in greater numbers every year. The acquisition of open spaces to which the thronging laborers in manufacturing towns can escape for a breath of fresh air and the enjoyment of the calm delights of natural scenery, is coming to be more and more a necessity every year, and while it is now admitted as a practical truth that the influence of such scenery is refreshing and uplifting, it must also be recognized as equally true that places which are rendered sacred by historic association make a direct appeal to our nobler impulses and generous passions, and in this way minister directly to the mental and moral health of the people.

We are apt to think that in the older civilization of Europe considerations like these have a wider and profounder sway. With a much longer history there are many more places in the old countries than in our own which

are hallowed by deeds of patriotic sacrifice; and with a denser population there is greater need there than there is here of free spaces for public enjoyment and a stronger motive for protecting beautiful natural objects from being vulgarized or destroyed. And yet a little more than a month ago it was found advisable in England to organize a movement to establish a "National Trust for Places of Historic Interest and Natural Beauty." The originators of this movement state that the nation is in danger of losing many of its most valuable possessions through the want of some custodian to whom they may be transferred and by whom they may be guarded. Districts celebrated for natural beauty are being marred and disfigured; houses and ruins of unique interest are destroyed because, as they pass from hand to hand, they sooner or later come into the ownership of persons who cannot appreciate them or who are forced to realize any money value they may have. Such noteworthy spots as the summit of Snowdon, the island in the middle of Grassmere Lake and the Ladore Falls have all come into market within the last two years, and they could have been secured for public enjoyment if there had been any body in existence capable of acquiring and protecting them in the public interest. The quarrying operations along the Cheddar Cliffs are defacing some of the grandest scenery in the country, and if money could be raised to purchase these cliffs for public use, there is not a corporate body to hold and manage such property in behalf of the public. To meet this condition of things this national trust is to be incorporated, and its primary function will be to accept from land-owners gifts of places which they desire to place beyond risk of injury from their successors, and to keep such places intact and at the service of the nation. The new society numbers among its organizers some of the best-known men in the kingdom, and its first work will be to accept the care of a beautiful sea-cliff from a Welsh land-owner, who is desirous of transferring it to them. This body will lose no time, we are assured, in "acquiring legal power and entering upon its duties," and it will carry with it the good wishes of all civilized people the world over who have a feeling for nature and for historic association.

It is to be sincerely hoped that every state in the union will pass an act with a purpose like that of the Massachusetts law incorporating the Trustees of Public Reservations, or begin some movement similar to that organized by the Duke of Westminster, Lord Dufferin, Lord Roseberry, Sir Frederick Leighton, Professor Huxley and other public-spirited men in Great Britain. Of course, there must be a controlling public sentiment behind any legislation such as is here recommended if it is to accomplish its highest purpose, but it is evident that this sentiment is gathering strength every year, and it will grow by exercise. It will not be satisfied by the selection of a few isolated tracts, but as it develops it will be manifested, as we have already said, "in a reverent regard for natural scenery over the entire face of the country. It will ensure, not only intelligent treatment for special reservations, but it will help to protect every pleasing prospect from being marred, and it will act as a sensitive public conscience to protest against the obliteration and defacement of natural beauty and the desecration of spots that are hallowed by historic memories, wherever they are found."

The Origin of the Purple Beech.

AS all our readers probably know, the Purple or Copper-leaved Beech is not a distinct species, but a natural variety or sport from the common European Beech, as is shown by its botanical name—*Fagus sylvatica*, var. *purpurea*. The general belief among horticulturists has been that the first Beech with colored foliage was discovered in the last century in the Hainleiter Forest, near Sondershausen, in Thuringia, and to it all the many specimens which adorn the pleasure-grounds of Europe and America can trace back their origin. This belief was supported not long ago by Herr G. Lutze, of Sondershausen, in an article published in the Bulletin of the Thuringian Botanical Society, which declares that the historic tree

still exists, is about 200 years old, and must be regarded as "the parent of all Purple Beeches." But Herr Lutze acknowledged that this belief contradicts the assertions of another writer, Aschershausen, who maintains that Purple Beeches are indigenous in southern Tyrol.

These contradictory affirmations are noted by Herr J. Jäggi, of Zurich, at the beginning of an article first published in the Swiss Journal of Horticulture, and thence copied into the pages of a recent number of *Gartenflora*. Herr Jäggi, who says that Aschershausen probably based his assertion upon Hausmann's Flora of the Tyrol (Innsbrück, 1851), quotes Hausmann's entry thus: "*Fagus sylvatica*, var. *sanguinea*: Common in the mountains around Roveredo," and says that the authorities he cites are Pollini, who died in 1831, and Cristofori, who died in 1848. And then Herr Jäggi proceeds to throw a clearer light upon the history of our familiar tree.

On page 268 of vol. i. of *Die Harbkesche wilde Baumzucht*, published at Brunswick in 1772, he tells us, Philippe Du Roi says: "A variety of the common Beech is *Fagus sylvatica* foliis atro-rubentibus (*F. rubrifolia* Buchensis, Ott, *Dendrologie*, 245). In Germany this variety is represented by several tall trees in the principality of Schwarzburg, whence it has been transported into cultivated grounds and gardens. . . . Ott met with it in the Canton Zurich, in a garden near the village of Buch, and named it from this circumstance." But, as Herr Jäggi then shows, Ott was here misquoted by Du Roi. What he had really said (page 245, *Dendrologie*, Zurich, 1763) was: "In Switzerland we have two varieties of the Beech: (1) *Fagus foliis candidis*, Scheuchz, *It. alp.*, vi., page 322; and (2) *F. rubrifolia* Buchensis, Wagner, *Helv. curios.*, page 266. The latter is found nowhere except near the village of Buch, on the Irchel mountain, in the Canton of Zurich, and there only in small numbers, and also in a garden to which it had thence been carried, retaining its purple color."

Following up this clue, Herr Jäggi then shows that "the Swiss Purple Beeches can by no means have been derived from the Thuringian tree, for we have certain witness to a group of native Swiss specimens which greatly antedated the supposed 'parent' at Sondershausen, and, indeed, must have long existed while this was still in its swaddling-clothes." Turning to the authority cited by Ott (Wagner's *Historia naturalis Helvetiæ curiosa*, Tuguri, 1680), he quotes the following sentence: "A Beech wood at Buch, on Irchel mountain, in Zurichgau (commonly called the Stammberg) contains three Beech-trees with red leaves, such as are nowhere else to be found."

Still more explicitly, we then learn, speaks Scheuzer, in his Description of the Natural History of Switzerland (*Beschreibung der Nature-Geschichten des Schweizerlandes*, Part I., Zurich, 1706), filling two quarto pages (pp. 2 and 3) with an article called "The Red Beech-trees of Buch."

"At Buch," this account runs, "a village lying in the Andelfinger estate, in the Canton Zurich, on the so-called Stammberg, there stand among other Beeches, Oaks and other forest-trees, three Beeches which differ from the sort commonly known in Europe in that they assume their colored garment early, at the beginning of summer; and, strange to say, at the holy Feast of Whitsuntide offer to our sight a marvelously beautiful red, so that the peasants dwelling within the limits of a two-hours' journey are accustomed then to assemble here to break off leaves and twigs from these blood-red Beeches and carry them home in their hats. The inhabitants explain that, in former times, five brothers murdered each other on this spot; and, as a righteous testimony from God, five blood-besprinkled Beech-trees sprang up, as a lasting witness to so horrible a deed. No one knows anything about the time when this murder-occurrence took place, nor about any other of the facts needful to establish the authenticity of the history. Nevertheless, it is certain that the peasants now living (1706) did not invent the fable, but inherited it as a tradition from their ancestors. And it is said that here and there in old herbaria notices of the Red Beeches of Buch may be found. For which reasons one is prompted to question whether perhaps the village of Buch itself may not have obtained its name from these rare trees."

The German for Beech, we may explain, is Buch. In Sulzer's edition of Scheuchzer (Zurich, 1746), a note appended to the term "blood-red" explains that the color is really a dark red; another note attached to the words last quoted says that the armorial shield of the village of Buch bears, in fact, a picture of a red Beech-tree; and a third tells us that at that time one or two of the red trees seemed to have perished, while, on the other hand, "new ones had followed in their places," this note reading as though the commentator had not himself investigated the matter.

The fables about these Beeches at Buch, continues Herr Jäggi, "are still current, with variations, in the village and its environs. We see," he then explains, "that in elder days probably five large Beeches of the sort existed; in Wagner's time (1680) there were still three; later, two more perished. Kolliker, according to his *Verzeichniss der Phanerogamischen Gewächse des Kantons Zürich*, published in 1839, saw one; and this still exists. It is not exactly of giant dimensions, and no young ones of the kind are now present." From all these facts Herr Jäggi concludes that the earliest certain historical notice of the existence of the Purple Beech is found in Wagner's *Historia*, 1680, and relates to the Purple Beeches at Buch, in Switzerland, its witness, however, reaching much further back, through legends, old herbaria, the coat-of-arms of the village, etc.; that, as the famous existing Purple Beech at Sondershausen, in Thuringia, is about 200 years old (dating back, therefore, to just about the time when Wagner wrote), it is not impossible that it may have been propagated, by seed or cutting, from one of the trees at Buch, without any record having been preserved of the fact; that the Purple Beeches of Buch cannot have been derived from the Tyrol, where, very likely, the variety is indigenous, but must have originated on the spot; that, if the example at Sondershausen was derived, neither from the Tyrol, nor, which is also uncertain, from Buch, then Purple Beeches have evidently originated spontaneously in various places; and that this is the conclusion which seems to himself the most sensible. "In any case," he adds, "the questionable Thuringian tree is by no means the mother-tree of all the Purple Beeches in the world."

He does not deny, however, that it is the mother-tree probably of all, and certainly of almost all, those which now adorn the pleasure-grounds of Europe and America. It is the only authenticated source from which horticulturists have derived their stock. Naturally, the propagation of its offspring is usually effected by means of grafting, although, if a hundred seeds of a colored tree are sown, some of them are likely to produce plants like the parent, while from the others green Beeches of the normal kind will spring.

Foreign Correspondence.

London Letter.

THE last of the 1893 meetings of the Royal Horticultural Society was held on the 12th ult. For the time of year the exhibits were exceptionally numerous and interesting. There was a fine selection of Orchids, the following being the most noteworthy:

CYMBIDIUM TRACEANUM.—This plant was introduced accidentally along with a batch of *C. Lowianum* and flowered for the first time in 1890 in the collection of Mr. A. H. Tracey, an Orchid dealer of Twickenham. It afterward became the property of Baron Schröder, who, I am informed on reliable authority, would not now take a thousand guineas for it. Only the one example of it is known, and this is now a splendid specimen. It flowers freely, having produced three very strong spikes this year. One of these was exhibited among a group of Orchids shown by Baron Schröder. It bore seventeen grand flowers, each fully five inches across, powerfully fragrant, the elegant sepals an inch wide and nearly four inches long, and the lip as large as that of *C. grandiflorum* (Hookerianum), to which *C. Traceyanum* is closely allied. The color of the sepals and petals is pale yellow, with streaks and dots of crimson, the lip being cream-yellow, with crimson spots on the reflexed front lobe, and crimson lines on the upright rounded lateral lobes. The large waxy-looking column is cream-white, with a purple tip. This is a magnificent Orchid, and, compared with some high-priced favorites, I should say it is quite worth the value put upon it by its owner.

CÉLOGYNE BARBATA—A large specimen bearing twelve spikes, each eighteen inches long and bearing six or more flowers, came from Baron Schröder. The flowers are white, with a fimbriated lip colored snuff-brown. This is the largest specimen of this species I have ever seen.

CYPRIPEDIUMS.—*Cypripedium Sanderæ* and *C. Sanderianum* are two nearly allied forms of the common *C. insigne*, both having primrose-yellow flowers, without the green and brownish coloring of the type. That called *Sanderæ*

is slightly larger and of a paler yellow color than the other, from which it also differs in having a few dots of dull red near the base of the white-bordered dorsal sepal. Examples of these also came from Baron Schröder's collection. A single plant of *C. Sanderæ* flowered among an imported lot of *C. insigne* about five years ago. Messrs. Sander cut the plant in two and sent one half to public auction, when Baron Schröder bought it for seventy-two guineas. Mr. Measures, of Streatham, secured the other half for one hundred guineas. The year following he cut it in two, selling one piece to his brother for one hundred guineas; next year he cut what remained into three, sold one portion for one hundred guineas, kept one and sold back the third to Messrs. Sander for twenty-five guineas. Baron Schröder's piece has never been mutilated. *C. venustum*, var. *Measuresianum*, is another variety which owes its value to the absence of all color, except yellow and green, from the flowers. A plant of it in flower was shown by Mr. R. D. Measures. *C. fasciatum* is a new hybrid between *C. Spicerianum* and *C. hirsutissimum*. A plant of it in flower was shown by Monsieur Jules Hye, of Ghent, and it easily obtained a first-class certificate on account of the size and attractive color of its flowers, which are as large as those of *C. hirsutissimum*, not unlike it in form and color, except the dorsal sepal, which is large and colored rose-purple, with a white margin and green spots at the base. *C. Ceres*, raised in 1891 by Mr. D. O. Drewilt from the same parents, is not nearly so fine a plant. *C. Warnhamense*, a hybrid between *C. Curtisii* and *C. lævigatum*, obtained an award of merit, as also did *C. Wiganianum*, a hybrid between *C. Harrisianum* and *C. Ashburtonæ*.

LÆLIA ANCEPS.—This species was represented by numerous varieties, some rare and every one beautiful. Messrs. F. Sander & Co. showed the following varieties: *Oweniana*, *Sanderiana*, *Percivaliana* and *Barkeriana*. From the same firm came a plant of the beautiful so-called natural hybrid *L. Boothiana*, with flowers of a rich rose-purple color. Another deviation from the usual run of autumn-flowering *Lælias* is one shown as *L. Finckeniana*, which obtained a first-class certificate. It is very near some of the white forms of *L. anceps*, but the flowers are small, white, with a blotch of purple on the front lobe. In my opinion there is as much confusion among these Mexican *Lælias* in consequence of the practice of naming every plant that varies slightly in color or form from a selected type, as there used to be in the *Cattleyas* of the labiata section before they were boldly tackled by Messrs. J. Veitch & Sons in their invaluable *Orchid Manual*.

NOVELTIES.—*Chysis Oweni* is a new species in the way of *C. aurea*, but the flowers are smaller and yellowish, tinged with rose-purple on the segments. *Cyrtopodium virescens* is new to cultivation, having been introduced from Brazil by Messrs. Sander & Co., who showed a plant of it bearing an erect spike two feet high, with a crowded raceme of elegant flowers each an inch across, with crisp segments, yellow, with brown spots, suggestive of *Ansellia Africana*. This distinct species is also now in flower at Kew. *Lycaste Luciani* was shown by L'Horticulture Internationale, Brussels. It has flowers as large as those of *L. Skinneri*, with dull flesh-colored sepals, whitish petals and a hairy lip, white, flushed with rose. *L. Imschootiana* is another new plant which was shown by the same firm. It also has large flowers, colored pale brown, with dull red dots, the lip yellow, with red spots. It obtained an award of merit. *Cochloda Noezliana*, a spike bearing seventeen bright crimson flowers, and a spike of *Cattleya labiata* (*Warocqueana*) bearing six flowers also came from the Brussels nursery. The fame of this establishment for *Odontoglossums* was well sustained by two beautiful plants shown by them. They were both varieties of *O. crispum*—one called *Thompsonæ* carrying a spike of fifteen large full flowers, with three large spots on each segment; the other, called *amplissimum*, being equally good, but pure white. The former obtained an award of merit.

NEPENTHES.—Messrs. J. Veitch & Sons exhibited a group

of these plants, the most noteworthy being one called *Amesiana*, which is a seedling in the way of *N. Chilsoni*, but the pitchers are much larger. It obtained a first-class certificate. *N. Wingleyana* *superba*, also shown as new, is very similar to one grown at Kew as *N. Hookeræ*. A most distinct and beautiful hybrid is *N. mixta*, which Messrs. Vetch raised from *N. Northana* and *N. Curtisii*, also shown in splendid condition. The hybrid has longer pitchers than *N. Curtisii*, colored pale red-brown, with a rich mottling of deep purple. *N. Dicksoniana* and *N. cincta* were also represented by specimens with very large pitchers. The most striking of all, however, was a beautifully grown specimen of the extraordinary *N. Barkei* *excellens*, carrying nine big pitchers whose "tight waists" and rich coloration are peculiarly attractive.

The following plants were shown by Kew: *Bomarea Patagoensis*, a large cluster of flowers of rich orange-red color. This plant has been in flower since last March, and it has still numerous buds to open. *Calpurnea aurea*, the Natal *Laburnum*, an elegant tree from Natal, with all the appearance of the common *Laburnum*. It is grown in a cold greenhouse at Kew, where it flowers at various seasons. *Manettia bicolor*, a plant which I perceive is a favorite in America, but is scarcely known here notwithstanding its good nature under ordinary cultivation and its attractive numerous crimson and yellow flowers. *Senecio macroglossus*, the Cape Ivy, a beautiful greenhouse climber with Ivy-like leaves and golden-yellow leaves as large as Paris Daisies. *Brownea Crawfordii*, the magnificent hybrid of Irish origin, which is a glorious picture in winter in the Palm-house at Kew, where it produces numerous enormous heads of bright red flowers.

CHRYSANTHEMUMS.—A large collection of cut flowers, many of them very fine, were shown by Mr. R. Owen, of Maidenhead. Among them were numerous unnamed or newly named English seedlings, some of which showed considerable promise. Mr. Owen is one of the leading growers and raisers of Chrysanthemums in England.

LOXICERA HILDEBRANDIANA.—The introduction of this extraordinary Honeysuckle by means of seeds sent from Burma, from which a batch of young plants has been raised at Kew, is decidedly good news. For its discovery we are indebted to General Collett, who found it in upper Burma about five years ago. He speaks of it as "a conspicuous shrub with large dark glossy leaves and fine crimson flowers seven inches long, and by far the largest of any known species of Honeysuckle." It is likely to require the same treatment as *Rosa gigantea*, which was also discovered by General Collett in the same region.

INCARVILLEA DELAVAYI.—In the *Revue Horticole*, for December, there is a colored figure of this plant, which has been introduced from China, and is, I believe, being distributed by a Continental nurseryman. To any one acquainted with the Indian *Amphicome* *Emoidi*, the resemblance to it of this new *Incarvillea* will, no doubt, occur. Whether, however, it is an *Amphicome* or an *Incarvillea*, it is certainly a beautiful plant as represented by the picture here mentioned. It grows less than a foot in height and has pinnate dark green leaves, like those of *Tecoma grandiflora*, and large erect racemes of rich red and yellow flowers as large as those of *Gloxinias*. I have lately seen specimens of another *Incarvillea*, also from China, with even larger flowers than those of *I. Delavayi*, which it resembles in habit. This has been named *I. grandiflora* by Mr. Hemsley. It is a plant which ought certainly to be secured for gardens.

THE ROSE-COLORED CALLA.—I referred to this plant a few weeks ago in consequence of a notice of it from Messrs. Krelage & Son, of Haarlem, with whom it had flowered. As I then anticipated, it proved to be *Richardia Rehmanni*, Mr. N. E. Brown having lately determined it from specimens supplied by Messrs. Krelage. This species is chiefly remarkable for its lanceolate instead of sagittate leaf-blades. The flower or spathe is as large as that of the dwarf variety of *R. Æthiopica*. At the last meeting of the Royal Horti-

cultural Society a colored picture and letter from Mr. Medley Wood, of Natal, were communicated by the Director of Kew. From this it appears that there is a form of *Richardia Rehmanni* the spathes of which are four inches long and of a dull rose-purple color. The drawing had been prepared from a plant grown by Mr. Wood, to whom Kew is indebted for tubers which are likely to flower shortly.

London.

W. Watson.

New or Little-known Plants.

Fraxinus Bungeana.

THIS is the north China representative of the Manna Ashes, so called because the manna of the *Pharmacopœia* is derived from one of the species, *Fraxinus Ornus* of southern Europe and Asia Minor. The Manna Ashes, which are also called Flowering Ashes, form a natural group, distinguished from the Ash-trees of our woods by the flowers, which are furnished with a white corolla deeply parted into two or four, or rarely into five or six, narrow divisions, and by the position of the inflorescence, which is produced at the end of a short leafy branch, or in the axil of a new leaf, while in our ordinary Ash-trees the flowers have no petals and the inflorescence is developed from a separate bud in the axil of one of the upper leaves of the previous year, or at the base of a young shoot.

Of the Flowering Ashes, three species are found within the territory of the United States. *Fraxinus cuspidata* and *Fraxinus Greggii* inhabit north-eastern Mexico and cross the Rio Grande into western Texas, the forms ranging through southern New Mexico to Arizona, and *Fraxinus dipetra* in western California. None of them attain the size of trees in the United States, although in some parts of Mexico the Texas species are tree-like in habit. *Fraxinus cuspidata* is sometimes planted in the streets and plazas of the cities of Nuevo Leon, where, in early spring, when it is covered with its large clusters of pure white and very fragrant flowers, it is an attractive little tree well worth introducing into other countries with temperate climates. *Fraxinus Greggii* is very common on the limestone foothills of the Sierra Madre, where it often becomes twenty feet tall, and produces well-formed trunks (see the illustration on p. 451, vol. ii., of this journal), although north of the Rio Grande it is unusual to find it more than two or three feet high. The flowers of this species, which produces very small leaves, with wing-marginate stalks, are not known. It is probably not cultivated even in Mexico. In Europe and western Asia the group is represented by *Fraxinus Ornus*, a handsome small tree, which, unfortunately, is not hardy in our northern gardens; and in the Himalaya region by *Fraxinus floribunda*, a large and stately tree, the largest, perhaps, of the Manna Ashes, and a favorite shade-tree in many cities of northern India. But the largest number of species of these trees is found in western Asia, where there appear to be at least five or six, although some of them are still very imperfectly known.

Two of these Asiatic Manna Ashes are now well-established in the Arnold Arboretum—*Fraxinus longicuspis*, a small tree of northern Japan, which has not flowered here yet, and *Fraxinus Bungeana*, of which a figure from a drawing made by Mr. Faxon, in the Arboretum, appears on page 5 of this issue.

Fraxinus Bungeana,* as it appears in the Arboretum, is a shrub with slender, spreading, ashy gray stems three or four feet tall, slender, terete, dark gray branchlets marked by occasional pale lenticels, and stout, obtuse winter buds covered with dark puberulous scales. The leaves are two and a half to four inches long, with slender grooved

* *Fraxinus Bungeana*, De Candolle, *Prodr.*, viii., 275 (1844).—Maximowicz, *Prim. Fl. Amur.*, 474.—Hance, *Jour. Linn. Soc.*, xlii., 83.—Franchet, *Pl. David.*, i., 203.—Wenzig, *Bot. Jahrb.*, iv., 170.—Forbes & Hemsley, *Jour. Linn. Soc.*, xxvi., 84. *Fraxinus floribunda*, Bunge, *Mém. Sav. Étr. St. Pétersbourg*, 135 (1834) (not Wallich). *Fraxinus obovata*, Blume, *Mus. Bot. Lugd. Bat.*, i., 311 (1807).—Maximowicz, *Mé. Biol.*, ix., 395.—Franchet & Savatier, *Enum. Pl. Jap.*, ii., 434. *Fraxinus Ornus*, var. *Bungeana*, Hance, *Jour. Bot.*, xlii., 133 in part (1875).

petioles which, while young, are furnished toward the base and at the insertion of the leaflets with tufts of thick orange-colored tomentum, and seven, or rarely five, leaflets; these are ovate or broadly obovate, narrowed at the apex into broad points, wedge-shaped at the base, and coarsely crenately serrate above the middle; they are thick and firm, or

pedicels and are produced in compact panicles about two and a half inches long and broad; they are mostly perfect, or sometimes unisexual by the abortion of the stamens, and consist of a minute four-lobed calyx, persistent on the fruit, a white corolla a quarter of an inch long, and divided to the base into four linear-obovate petals, two stamens with



Fig. 1.—*Fraxinus Bungeana*.—See page 4.

sometimes subcoriaceous, conspicuously reticulate venulose, dark green on the upper surface, pale and yellow-green on the lower surface, an inch to an inch and a half long, half an inch to three-quarters of an inch broad, and are raised on slender elongated petiolules. The flowers, which appear at the end of May, are borne on slender

elongated slender filaments and oblong anthers, and a narrow ovate ovary gradually contracted into a long slender style, divided at the apex into two stigmatic lobes. The fruit ripens in September, and is an inch long, with a short, slightly flattened, many-nerved body margined to about the middle by the decurrent base of the ovate wing, which

is rounded or often emarginate and tipped at the apex with the remnants of the style, and marked on both sides by a broad conspicuous mid-nerve.

Prunus Bungeana was discovered by the German botanist whose name it bears, in 1831, during his overland journey from St. Petersburg to Peking, on the mountains near the Chinese capital. It is said to be common on the hills of northern China and in Mongolia, where it was found by the Abbé David. In the Arnold Arboretum it was raised from seed sent by Dr. Bretschneider from Peking in 1881. This pretty little Ash, which is perfectly hardy, deserves a place in our shrubberies as a representative of a group of interesting plants which generally do not succeed in this climate, and for the abundant clusters of white flowers with which it covers itself every year.

C. S. S.

Cultural Department.

Field Mice and Bark Destruction.

THE depredations of mice in the young orchard or plantation of young trees are too often not realized until the damage is done, and repair, if possible, must be resorted to, instead of the simpler matter of prevention. It is rarely that mice figuratively attack trees in any other way than by girdling the stems by gnawing the bark, either partially or all around. If the removal of the bark is complete for the whole circumference of the trunk, the tree may put forth leaves and flowers again, possibly for more than one season, but it will eventually languish and perish when it should be in the prime of its growth. It is at this season, and during the winter and in early spring, that damage is to be apprehended, and the greatest danger lies in localities where the snows lie deepest. Where the ground is bare and open, kept free of grass and weeds and where snows do not long remain, there is much less liability to injury to the trees by small rodents.

Where snows cover the ground for a large part of the winter, and often for a considerable depth, mice are well protected from observation by their natural enemies and are enabled to carry on their work of injury without molestation and without exciting suspicion. As they burrow their way from one place to another, or from one tree to another, either along the surface of the ground between the soil and snow, or through the snow itself, it is an efficient and inexpensive preventive of injury to trample the snow until it is quite firm and compact about the plants. This is very quickly done and leaves the snow in a condition which mice find it impossible or inconvenient to work through. The greatest danger is to be feared in the vicinity of fences or hedges where snows drift and lie deepest. In such places the destruction of the bark sometimes extends from the ground to the lower branches of young Apple and other trees, especially as mice are liable to be most abundant about the boundaries of an orchard, as such boundaries are usually in such a condition as to be really a refuge for vermin. Where snows are not deep or permanent in winter, it is often necessary to furnish the trunks of small trees with some kind of protection. They are particularly liable to injury if growing in the vicinity of grass or herbage.

For such protection any material may be used which is unpalatable or impregnable to mice, and is not too expensive. Laths and pieces of boards and staves are effective if loosely bound around the trunks by string or wire, the lower ends resting upon or slightly inserted in the ground. These are sometimes left on all the year, but in other cases are removed in spring and replaced in autumn. Tarred paper is also used, but, unless very thick, it is liable to become broken down and inefficient. What is known as asbestos-paper has been found useful. This or the heavy tarred paper should be cut into strips which will reach a foot or more up the trunk of the tree, and wide enough so as to go around the stem and overlap at least an inch, and also leave half an inch of loose space between the bark and paper, which should not be bound tightly around the stems. The lower ends of the paper may rest on the ground, and the sheath can be held in place by a couple of strings. If there is plenty of room for growth allowed, the paper need not be removed, and it will last for several years. Painting the trunks with tar has been advised, but it is very doubtful whether this would not injure young trees, and, although painting with other substances may answer the purpose, they are not so reliable as is an actual barrier.

There seems to be no very efficient and economical method of trapping these field mice. The placing of poisoned grain

and other food in the localities they are known to infest has been recommended. Among their natural enemies are the hawks, owls and weasels, and where these are plentiful the mice are kept within moderate numbers. Foxes, too, although mischievous in many respects, render aid to the farmer and fruit-grower by destroying vast numbers of field mice, and he who takes long and frequent walks over snow-covered fields and orchards in the country must have often noticed Reynard's tracks and, here and there, the holes in the snow where his sharp ears had located a mouse, which had been speedily dug up and carried off.

Arnold Arboretum.

J. G. Jack.

Seasonable Notes.

REGULARITY in heating is essential at this season in the cultivation of many plants. But it should also be remembered that the temperature should not be kept too high, a mistake which forces into growth some species that should be resting now, while it helps to increase the numbers of obnoxious insects like the red spider, thrips and the various scale insects.

It is an excellent plan when building even a small conservatory to divide it into two apartments by a partition across the centre, and to have the heating apparatus under control by means of valves, so that different temperatures may be maintained in the two sections. A greater variety of plants can thus be cultivated, and flowering plants can be held back for future supply. Forced bulbs may also be hardened off as their flowers open, before they are ready for room decoration. In the cool section a few such gems as *Daphne Indica*, *Eriostemon buxifolius* and *Erica hyemalis* can be successfully grown. The limited space of many conservatories makes it impossible to adopt the same methods used in large commercial establishments, and it is necessary to grow some plants in pots that would otherwise be planted out in beds. Among these are Carnations and Bouvardias, both indispensable for a supply of winter flowers. After the first crop of bloom has been cut these plants will probably need some stimulant to induce a strong new growth, this treatment being especially necessary for Bouvardias, as they root freely and are gross feeders. If the space is needed for other purposes, the Bouvardia-plants may be discarded after the first flowering and the stock perpetuated by a panful of root-cuttings. It is better, however, to store away a few of these old plants under the benches, in readiness for outdoor planting next May, as an abundance of summer flowers can thus be obtained.

In the warm section of the conservatory, if it is specially devoted to foliage plants, the question of moisture will require attention now, as, with the strong fire-heat necessary during our northern winters, the atmosphere of a greenhouse loses its moisture very rapidly. Syringing is necessary on bright days, and this should be done during the warmth of the forenoon, and during dull weather will frequently have to be omitted altogether, but the necessary moisture can then be supplied by sprinkling the walks and under the benches morning and evening.

It is at this season that the red spider plays such havoc with foliage plants if once allowed to become established, and, consequently, the leaves of *Dracanas*, *Dieffenbachias*, *Alocasias* and others of like character should be examined frequently and washed with a soft sponge and a weak solution of whale-oil soap, for a little prevention pays better than a great deal of cure after the evil has become deep-seated. It will also be found that the plants noted above do not grow rapidly just now, and it is safer not to pot them for a couple of months. Less water at the root will, therefore, be required than during active growth. Although being mostly evergreen, these plants need more or less water through the whole year. Some of the *Alocasias*, notably *A. Jenningsii* and *A. Marshallii*, die down to the root, after the manner of *Caladiums*, and, consequently, cannot be considered among decorative plants for winter, but others of the same genus, like *A. Sedenii*, *A. Veitchii* and *A. Sanderiana*, retain most of their foliage until new growth begins in the spring.

Anthuriums are useful both for flowers and foliage, and though not essentially a winter-flowering species, yet their strange-looking spathes have such a lasting quality that the flowering season of *A. Scherzerianum*, *A. Andreanum* and their numerous offspring frequently extends through a considerable portion of the winter.

Perhaps the most useful of Orchids, *Cypripedium insigne*, will now be in flower, and the beauty of the blossoms will be continued much longer in a cool house if no water is allowed to lodge on the flowers. Shortly after the flowering season is

a good time to repot this *Cypripedium*, but if in a healthy condition it does not require potting oftener than once in two or three years, and I have kept plants in excellent condition in the same pans for six or seven years by applying a top-dressing each season.

Holmesburg, Pa.

W. H. Taplin.

Hardy Plants on New Year's Day.

A LOOK over the outdoor garden at the commencement of a new year reveals much quiet activity among many plants, which can scarcely be said to be in a state of suspended animation, even during the hard weather. When out of the actual embrace of frost, as they often are here early in the year, every day shows some advances, and soon the annual procession of flowers will commence, with none more welcome than the cheerful heralds, the Snowdrops, the Anemones, the Crocuses and the Irises. The autumnal Snowdrops, which bridge over the winter season, have been a failure with me this year, and they seem to be of a rather tender constitution; probably the severity of midwinter prevents their ripening well as in their Grecian homes. The earlier Galanthuses are just commencing to peer out as the days lengthen. *Crocus Imperati* is simply biding its time for a little more sunlight in which to display its showy flowers. The Irises of the *reticulata* section are making spasmodic growth, with the first signs of bloom on some lately planted *Iris Histrio*. *Anemone blanda*, which grows strongly with me, usually awakens, as if with a sudden start, about this time, and there is no flower which gives us such pleasant greeting on a sunny day in winter as this starry gem. Of course, the Grape Hyacinths, the Spanish Irises and many other species of *Iris* still continue their growth begun in the fall, though they are flowers of the second season.

Of the California bulbs, so far, I have only noticed *Calochortus venustus* and *C. zyadenus* above ground. The Sedums make cheerful mats of color, especially valuable at this season, they being not at all affected by the cold. Some of the Thymes are also grateful, while one is glad to see good patches of *Aubrietia* and *Arabis* as an earnest of coming pleasure. Hybrid Primroses are the only ones of the family with which I have had success in the open. These are weather-proof, but are better for not being subjected to too many changes of freezing and thawing; at present they are dense rosettes of unharmed leaves. The best bit of color in the garden at present is a bush of *Berberis* (*Mahonia*) *Aquifolium*, whose glistening leaves now have a handsome bronzy tint; a few sprays of these, with some clusters of *Rosa multiflora* hips, make a seasonable bouquet, quiet and effective in a bright light.

Elizabeth, N. J.

J. N. Gerard.

Winter Care of Trees.—There is no better time than the present to examine groves and groups of trees in order to determine whether they are becoming overcrowded, and to designate those which should be removed to make room for the rest. The axe is the only remedy for crowding among trees, and when this heroic treatment is necessary, no considerations of sentiment should be allowed to interfere with its use. At this season, too, it is easier to find where branches are growing too thickly on a tree, and where they are rubbing each other, than it is when they are in full foliage, and in the warm days of midwinter pruning can be done to advantage. When it is necessary to remove large branches they should be sawed close to the trunk and the edges cut smooth with a sharp knife. Coal-tar applied to the wound will keep out moisture and fungi, and thus prevent decay. Any kind of ochreous paint will answer almost as good a purpose, and it can be easily applied with an ordinary brush. All sprouts should be cut from the trunk and all suckers from its base, but the dead twigs in the heads of trees can be more easily detected in the summer. Of course, all diseased limbs should be amputated, and so should the branches of such trees as Hawthorns or Yellow-wood that are badly infested with scale. A top-dressing of loam or fine well-rotted stable-manure spread over the roots will encourage a vigorous growth next year. The dressing should be scattered over a circle as far as the roots extend.

In the Shrubberies.—Shrubs, too, must be well fed if they are expected to make luxuriant growth and show their highest beauty. No cultivator thinks of obtaining a fair crop in garden or field without fertilizing his land, and yet too many persons starve their shrubberies and then wonder why they are thin and unattractive. Of course, the shrubs like *Corylopsis*, *Forsythia*, *Van Houtte's* or *Thunberg's Spiræa*, *Cercis*, the bush *Honeysuckles* and other shrubs which flower early,

should not now be cut in severely, since the buds for spring flowers are already formed, and if we cut away the branches we destroy the possibility of flowers next season. If late-flowering shrubs have not yet been pruned, the work can still be done, and this will encourage the growth of wood which will bear flowers later in the season. In this class are the *Althæas*, *Hydrangea paniculata*, *Indian Tamarisk* and others. The pruning of *Roses* which are liable to be killed back to some extent had better be postponed until spring, so that we can be sure to cut below the dead wood.

New Brunswick, N. J.

R. A.

Correspondence.

Winter Notes from Missouri.

To the Editor of GARDEN AND FOREST:

Sir,—Nature, when left to herself, has beauty to show at every season. Autumn and winter have the sombre color of evergreens, the gleam of bright berries, and the soft gray tints of frost-touched seed-pods, which are as interesting in their way as the rich displays of flowers and foliage in spring and summer, and yet it is too much our custom to crowd our gardens with everything that can make the summer bright and leave the six months between the first and last frosts of the cold season void of every attraction. A winter garden need not be less pleasing than a garden in summer, although it may lack brilliancy of color and the beauties it presents are less evanescent and require less care to produce them.

With a milder climate than that of the northern states, the interval between the first frost of autumn and the last frost of spring extends here over fully five and a half months, while the violent fluctuations of temperature when the coldest months have warm September-like days, followed within thirty-six hours by a drop of the thermometer to zero or below, make the conditions almost as trying to vegetable life as those of much colder regions. Our winter gardening, therefore, has been confined to a display of evergreen foliage and of shrubs bearing bright fruit, together with an attempt to continue summer bloom into late autumn, and the use of as many hardy plants as possible with bright foliage and flowers in very early spring. We have found no difficulty in keeping up a show of *Chrysanthemums*, *Tritomas*, *Verbenas*, *Dianthus*, *Sweet Alysium* and *Calendulas* until the last days of November, while *Antirrhinum*, *Mexican Primrose*, *Cosmos*, *Feverfew* and a dozen other well-known garden plants last until the beginning of November, and *Pansies* and *Violets* bloom in the open air until nearly Christmas. About the last of January or sometimes early in February, *Pansies* and *Violets* begin again with the *Single Snowdrops* and the earliest *Crocuses*. We have made no trial of the early Irises over which Mr. Gerard is so enthusiastic, but such commoner plants as the *Scillas*, *Chionodoxas* and *Winter Aconite* introduce the long train of beautiful and fragrant flowers of bulbous plants from Holland. Besides this, each year we add early-flowering herbaceous plants from the nurseries, and seek out our hardy native wildings and transfer them to our own grounds, so that the last six weeks which we win from the frost may be called the gala season of our garden.

We have not done much planting of evergreens for the duller season, and yet we could hardly spare the traces of refreshing green which we already possess in our rockery fringed with evergreen Ferns, in the mound covered with the dark foliage of *Vinca minor*, the *Myrtle* of our grandmothers, and in the foliage of *Junipers*, *Spruces*, *Arbor-vitæ*s and other conifers which add some warmth to the dull color of the landscape. In late autumn we have the purple and bronze leaves of the *Barberries* and *Forsythias*, while vines of *Physianthus*, *Honeysuckle* and *Clematis* retain their colors into late November, with the *Passion-vine* (*Constance Elliott*) and *Solanum jasminoides* richly green well into December, and often into January. The leaves of some species of our native *Smilax* turn to a beautiful bronzy red, and persist until midwinter, so that we can, if we will, have late autumn foliage here from deciduous shrubs and vines alone. GARDEN AND FOREST has so often spoken of shrubs with showy fruit that there is no need of enlargement upon that point further than to say that no shrubbery where the berries of *Ilex* and *Evonymus*, of *Alder*, *Celastrus* and *Berberis* have a home can be chilled into common-place by frost and cold.

It should be remembered that while certain evergreens and plants with ornamental fruit will show their best qualities wherever they may be situated, it is a different matter with the plants which flower late or those with late-persisting leaves. They must be planted where they will be sheltered from the

north, against early and severe freezing, and from the east, where the early sun, shining brightly on wood and leaf still frozen, soon destroys them. It is only by favoring our plants in every possible way, by planting them on the sheltered sides of shrubberies, under the lee of buildings and at the foot of walls, that we can have their beauty in the dull season; and then the roots must be mulched to prevent rapid alternation of freezing and thawing. I have seen plants in full leaf when they stood in a sheltered nook, while others of the same species on the open lawn had been stripped six weeks before. These are matters which it pays to remember at planting-time.

Pinetide, Mo.

Lora S. La Mance.

Roses at the Waban Conservatories.

To the Editor of GARDEN AND FOREST:

Sir,—Other flowers have their periods of popularity, but the Rose is always queen, and of this I was lately reminded by a visit to the Waban Rose Conservatories at Natick, Massachusetts. The season has been a favorable one for Roses ever since June; the autumn, especially, has been bright and clear, to insure a good sturdy growth, conducive to free blooming later on. The houses set apart for Tea Roses were carrying an immense crop of bloom, held back, no doubt, for the Christmas holidays.

Madame Cusin, a lovely French Tea Rose, introduced in 1881, and for a long time popular in New York, is gaining in favor here. It is rather variable, but when seen in its true character is most beautiful. The color is very deep rose, with violet and yellow shadings, and it is very fragrant. Its chief uses are for bouquets and for evening wear, as it shows well under artificial light. Kaiserin Augusta Victoria, a comparatively new hybrid Tea, is considered by many the coming white Rose for forcing. It certainly is very beautiful, a full double, free-blooming, creamy-white flower, with a most delicious odor resembling that of the Magnolia, and, according to some, that of the Primrose, as others perceive it. For private gardens it will prove a decided acquisition, but it is yet questionable whether for commercial purposes it will supersede the Bride, as it seems to lack the continuous blooming qualities of that well-known variety.

Catherine Mermet is still considered the best rose of its color. It certainly is a most profitable one. Its elegant shape and lovely flesh-pink color bring it as near perfection as possible. Successful cultivation depends more on good, healthy stock, and suitable conditions as to temperature, air, careful watering, and the judicious application of stimulants than on the quality of the soil. The Bride is a white sport, now well known, originating with Mr. John N. May, of Summit, New Jersey, and sent out by him in 1885. Waban, a deep rose-colored sport of nearly uniform color, originated with E. M. Wood, of Natick, and was sent out by him in 1891. It is a most beautiful variety, but from a generally unsolved difficulty in meeting with its peculiar requirements, especially in the prevention of the development of a green centre, it has not become as generally grown as it promised to be. Bridesmaid is a still more recent sport, originating with Mr. F. L. Moore, of Chatham, New Jersey, and sent out by him in 1892. It is a beautiful clear pink, of nearly uniform color, having all the good qualities of its parent. It was predicted that it would displace the older variety; however, it now seems that there is a place for both. Madame Caroline Testout is a most attractive and pleasing reddish-pink hybrid Tea, of good clear growth and free-blooming qualities. It is more suitable for private gardens than for commercial use, as being a poor keeper it is not always a profitable investment for the dealers.

Several houses of hybrid perpetual Roses are started for Easter flowers. For earliest forcing, Magna Charta and Heinrich Schultheis, both of delicate pink shades, are the leading varieties. To give an instance of the varying adaptability of different varieties for forcing, it may be noted that Baroness Rothschild, started at the same time, will not be in bloom for nearly a month later.

Suisse Marie de Rodocanachi is a new hybrid perpetual, related, if one may judge from the manner of its growth, to Ulrich Brunner, and said to be one or two shades deeper in color, which is a most intense scarlet-crimson. Like Meteor, the popular crimson hybrid Tea, it was nearly lost to cultivation, its merits being accidentally discovered among an otherwise worthless lot of varieties. All the varieties for earliest forcing are grown in pots, and many of the plants have been forced several seasons. After blooming, all the next season's growth is made in the greenhouses and afterward

ripened outdoors. Many growers fail with pot Roses because they put them out-of-doors to make their next season's wood.
Wellesley, Mass.
T. D. Hatfield.

The Catalpa for Forest-planting.

To the Editor of GARDEN AND FOREST:

Sir,—I was much interested in the letter of your Kansas correspondent and the accompanying editorial note relating to the planting of the Catalpa in that state, and published in the issue of GARDEN AND FOREST for December 20th. I can confirm all that he says about the durability of Catalpa-wood and its value for cabinet-work. It is a misfortune, however, that he should have accepted as true the statement which he says was prevalent ten years ago to the effect that "Catalpas planted four feet apart each way, and cultivated three or four years, would every one make a post in from eight to ten years." Perhaps such statements did appear in the agricultural press, but surely no one who has observed the growth of trees, either in the forest or in artificial plantations, would have believed this possible. It is very easy to assume that if a tree will make a certain growth under peculiarly advantageous conditions, we can therefore assume that any and every other tree of the same species will always make an equal growth.

It is only on paper that men plant forests which grow in this prosperous way. "Set out your trees four feet apart," says the indoor forester, "then the third year thin out every alternate tree in the first row, and take the second row entirely, and you will have trees standing eight feet apart, exactly one-fourth of the number originally planted, all vigorous and happy, and growing into timber at railroad speed." But if any plantation was ever actually thinned out in this geometrical fashion I am sure it must have been seriously damaged. If the same kinds of trees would always grow uniformly in size and habit much labor would be saved to the tree-grower. As it is now, he has to assort his seedlings into several sizes from the seed-bed, then he plants each size in nursery-rows. At the end of three years he assort them in sizes and plants again, and then he selects several sizes. After that he assort them again so as to make collections of uniform size, and when they are planted out permanently they still refuse to keep even with each other. Now, in forest-planting, the seedlings which are set four feet apart each way are from ten to fifteen inches high, with a stem about as large as a lead-pencil. At the end of two seasons some will be five or six feet high, others two or three feet high. Of course, the smaller ones will be overshadowed in less than eight or ten years, but they should be left on the ground, as they assist in shading it, and die for the lack of light when the taller trees overtop them.

Your correspondent's plan of growing fence-posts by planting rows twelve to fifteen feet apart and five to six feet apart in the rows would be altogether too expensive. In planting corn, three rows could be grown between his rows of trees the first year, and if the trees were pruned three rows might be grown the second, but only two rows could be planted the third year, and as the corn could only be cultivated one way it would have to be hoed or hand-weeded, and the cost would be enormous, and he never would plant three or four crops of potatoes after three years of corn. If a farmer needs posts for use on his farm only, and does not intend to raise them for sale, the better way would be to plant a narrow belt of trees along the north and west lines of his farm. The outside row could be used as living posts, for a strip of board could be tacked to the body of a tree and two or three wires fastened to this. If a farmer preferred, he might plant a grove for shelter and could enjoy himself in the shade by thinning out the trees for posts as they crowded each other. In this case the trees should be planted equidistant, for he could get more post-lengths from his trees than if planted five or six feet apart and in rows fifteen feet apart. Under the latter system the trees would naturally lean more or less to the right and left of the row to get to the light, while if planted at equal distances both ways they would struggle upward, and make long straight trunks.

An essential point in forest-tree planting is to have the surface of the ground shaded as quickly as possible. It has been already explained in your columns that I have taken contracts to plant by the acre at four feet apart each way, and care for the trees until they reach five or six feet in height and shade the ground, that is, until they need no further care until they are thinned out. Now I could not have made this contract at the same price if the trees had been planted eight feet by eight and cultivated until they shaded the ground, although only one-fourth as many trees would have been required. The extra number of trees costs nothing compared with the years of cultivation, and especially with the expense of pruning.

It would cost more to prune a thousand trees if only three cuts were to be made to the tree than it would cost to plant five thousand trees. All this I have learned by experience in Kansas.

Your correspondent compares the growth of the tree at the ground with the growth of those planted closely, but he does not seem to consider that the closely set trees attain twice the height of his cultivated and fertilized tree in ten years, and hold their diameter well up while his own tree tapers quickly toward the top. I have had little experience in thinning out young forest plantations. When I delivered a plantation in Kansas it was my advice to leave it alone for eight or ten years, except to plow roads around every forty acres which were left sixteen feet wide for fire-breaks. I went through one large plantation, which had stood ten years in 1891, with the superintendent, and we adopted a rule that every tree whose leader was overshadowed by adjoining trees should be cut down. I spent two days with some handy workmen marking the trees to be cut out and explaining to them my method, and I estimated that at that time the thinning would cost seventy cents an acre. It was actually done for a little less. We might have thinned the woods by taking out the heaviest trees for posts, but this would have been vandalism. We left the thriftiest to grow, to the number of about fourteen hundred to the acre.

Mannville, Fla.

Robert Douglas.

Recent Publications.

Customs and Fashions in Old New England. By Alice Morse Earle. Charles Scribner's Sons. 1893.

Appealing chiefly to students of history and of human nature, Mrs. Earle's book, nevertheless, contains much that is specially interesting to the lovers of what we may call plant-history. This is particularly true of the chapters entitled "Supplies of the Larder," "Old Colonial Drinks and Drinkers," and "Doctors and Patients." In the first-named a good deal of space is naturally given to Indian corn and the various forms in which it was prepared for eating; but this, as well as the biography of the pumpkin, then generally called the pompion, is more or less familiar to most Americans. Fresher is the information that squashes were called by such cumbersome names as squontersquoshes and askutasquashes, and that Governor Winthrop was so impressed by the sight of popping corn that he carefully wrote of the way in which it "turns inside out." Who has not wondered why corn-bread is often called Johnny-cake? Here we read that it was first dubbed jonne-cake, or journey-cake, because it was an excellent article with which to fill the traveler's knapsack. Potatoes, says Mrs. Earle, "were on the list of seeds, fruits and vegetables that were furnished to the Massachusetts Bay colonists in 1628, and fifteen tons (which were probably sweet-potatoes) were imported from Bermuda in 1636 and sold in Boston at twopence the pound. Winthrop wrote of 'potatose' in 1683. Their cultivation was rare. There is a tradition that the Irish settlers at Londonderry, New Hampshire, began the first systematic planting of Potatoes. At the Harvard Commencement dinner in 1708 potatoes were on the list of supplies. A crop of eight bushels which one Hadley farmer raised in 1763 was large—too large, since 'if a man ate them every day he could not live beyond seven years.' Indeed, the 'gallant root of potatoes' was regarded as a sort of forbidden fruit—a root more than suspected of being an overactive aphrodisiac, and withal so wholly abandoned as not to have been mentioned in the Bible; and when Parson Jonathan Hubbard, of Sheffield, raised twenty bushels in one year, it is said he came very near being dealt with by his church for his wicked hardihood. In more than one town the settlers fancied the balls were the edible portion, and 'did not much desire them.' . . . Other vegetables were produced in New England in abundance. Higginson speaks of green peas, turnips, parsnips, carrots and cucumbers, and a dozen fruits and berries. Cranberries were plentiful, and soon were exported to England. Josselyn gives a very full list of fruits and vegetables and pot-herbs, including beans, which were baked by the Indians in earthen pots, as they now are in Boston bake-shops. . . . By Johnson's time New Englanders had 'apple, pear and

quince tarts instead of their former pumpkin pies.' . . . Josselyn said the 'quinces, cherries and damsons set the dames a-work. Marmaleet and preserved damsons were to be met with in every house.' Skill in preserving was ever an English woman's pride, and New-English women did not forget the lesson they had learned in their 'faire English homes.' They made preserves and conserves, marmaleets and quiddonies, hypocras and household wines, usquebarbs and cordials. They candied fruits and made syrups. They preserved everything that could bear preserving. I have seen old-time receipts for preserving quinces, 'respasse,' pippins, 'apricocks,' plums, 'damsons,' peaches, oranges, lemons, artichokes, green walnuts, elecampane-roots, eringo-roots, grapes, barberries, cherries; receipts for syrup of clove, gilliflower, wormwood, mint, aniseed, elder, lemons, marigolds, citron, hyssop, liquorice; receipts for conserves of roses, violets, borage-flowers, rosemary, betony, sage, mint, lavender, marjoram and 'piony'; rules for candying fruit, berries and flowers, for poppy-water, cordial, cherry-water, lemon-water, thyme-water, Angelica-water, Aqua mirabilis, Aqua Coelestis, clary-water, mint-water. No wonder a profession of preserving sprung up."

Cider, we are told, "was made at first by pounding the apples by hand in wooden mortars; sometimes the pomace was pressed in baskets. Rude mills were then formed with a hollow log, and a heavy weight or maul on a spring-board. Cider soon became the common drink of the people, and it was made in vast quantities. In 1671 five hundred hogsheads were made of one orchard's produce. One village of forty families made three thousand barrels in 1721. . . . It was freely used even by the children at breakfast, as well as at dinner, up to the first quarter of the present century, when many zealous followers so eagerly embraced the new temperance reform that they cut down whole orchards of thriving Apple-trees, conceiving no possibility of the general use of the fruit for food instead of drink." Spruce and birch beer, says Mrs. Earle, were brewed by mixing a decoction of sassafras, birch or spruce bark with molasses and water, or by boiling the twigs in maple-sap, or by boiling together pumpkin and apple-parings, water, malt and roots.

Tea was a rarity until after the opening of the eighteenth century. Some queer mistakes were made in early days "through the employment of the herb as food," the liquor being thrown away after boiling and the leaves eaten with butter and salt. Some called the "new China drink" "rank poison, far-fetched and dear-bought," while others ascribed much virtue to its use. When the dawning Revolution excited the minds of colonial dames against it, many native substitutes were tried, "the most esteemed being Liberty tea, which was thus made: 'The four-leaved loose-strife was pulled up like flax, its stalks were stripped of leaves and boiled; the leaves were put in an iron kettle and basted with the liquor from the stalks. Then the leaves were put in an oven and dried. Liberty tea sold for sixpence a pound. Ribwort was also used to make a so-called tea—Strawberry and Currant leaves, sage, and even strong medicinal herbs likewise. Hyperion tea was made from Raspberry leaves." But when, to explain its nature, Mrs. Earle cites a contemporary writer as saying that Hyperion and Labrador teas are the same, we feel she must be mistaken, and that the beverage in question was manufactured from *Ledum latifolium*, that familiar plant of the Heath family whose common name is still Labrador Tea; especially as her authority goes on to say: "The virtues of the plant or shrub from which this delicate tea is gathered were first discovered by the aborigines, and from them the Canadians learned them. Before the cession of Canada to Great Britain we knew little or nothing of this most excellent herb, but since that we have been taught to find it growing all over hill and dale between latitude forty and sixty. It is found all over New England in great plenty, and that of best quality, particularly on the banks of the Penobscot, Kennebeck, Nichewannock and Merrimac."

The demands of the toilet were met by Colonial dames in painstaking, artificial ways which would seem frivolous, indeed, to their supposedly more frivolous descendants of to-day. Pomades, cosmetics, face-washes, hair-dyes, tooth-powders, and especially perfumes, were very largely manufactured in Peritan households, and stills, retorts and mills for the making of perfumes, oils and "beauty-waters" were almost as common as looms and spinning-wheels. Much time was spent in planting suitable materials in the garden, and in gathering them there and in the woods and fields; and "in every garret, from every rafter, slowly swayed great susurrous bunches of withered herbs and simples, awaiting expression and distillation. . . . In many an old garret, now bare of such stores, 'mints still perfume the air'; the very walls exhale 'the homesick smell of dry, forgotten herbs.'"

But the still-room was used likewise for the preparation of medicines, and quaint and curious is the catalogue Mrs. Earle gives of the partly vegetable, partly animal and partly mineral remedies used in colonial times. But we need not dwell now upon her chapter entitled "Doctors and Patients," for we noticed it at some length when it first appeared, under the title, "The Queen's Closet Opened," in the *Atlantic Monthly*. In closing Mrs. Earle's delightful, gossipy, yet in many ways seriously instructive volume, one wishes only that she had told us something of our far-off grandmothers' gardens as well as of their home-interiors.

Notes.

The last English census enumerated about 5,000 women who are professional gardeners in that country, and six who are employed in superintending the drainage of towns.

A statistical summary with regard to the rate of growth of different species of trees, as observed in the Pinetum at Schovenhorst, in Holland, has recently been published. The measurements were made in the years 1878, 1886 and 1892, and deal with 200 specimens. The tree which showed the most rapid increase of size was *Abies grandis*. At three feet four inches above the ground it was twenty-two inches in circumference in 1878, forty-four inches in 1886, and sixty-nine inches in 1892, while its height was noted as twenty-one feet four inches in 1878, thirty-five feet three inches in 1886, and fifty feet in 1892.

The forestry exhibit of the state of Pennsylvania at the World's Fair has just been deposited at the State College in Centre County. Fortunately, the large sections of tree-trunks have not been damaged beyond the loss of small pieces of bark and a few bruises on the oil surfaces. The large photographs in swinging frames make an interesting and beautiful series. Among the trunk specimens is one of *Sassafras*, twenty-six inches in diameter, and showing 107 rings of annual growth, and another of a White Pine, thirty-eight inches in diameter, showing 288 rings. Pennsylvania cannot boast of many trees of similar dimensions in her forests to-day.

Le Comte Oswald de Kerchove de Denterghem, the distinguished Belgian horticulturist, and the author of a work on *Les Palmiers*, is about to issue *le Livre des Orchidées*, an octavo volume, with thirty colored plates and more than two hundred figures. The work will be divided into five divisions and will embrace the history of Orchids, their morphology, their geographical distribution, their uses and their cultivation, the last part being devoted to a review of each of the genera cultivated in European gardens, with descriptions of the most valuable species. The volume may be obtained from the publisher, A. D. Hoste, Rue des Champs 47, Ghent, Belgium. The price is thirty francs.

The use of wire netting for tree-guards originated, we believe, with the Commission in charge of tree-planting in Washington. It has been largely adopted elsewhere, not only because it is cheap, but because it is proving most effective. How complete this protection is can be plainly seen by one who rides through certain streets in Washington, where the trees were originally planted twice as close as they should have been. Since every other tree is to be removed when it begins to interfere with its neighbors, these guards have only been placed on the trees that are to remain, and in a recent examination of a row of trees a mile long and treated in this

way there was hardly a visible defacement on a single trunk which had been surrounded by the wire screens, although the meshes were two inches in diameter, while the unprotected trees were almost invariably badly injured, and some of them completely barked on the street side from the ground to a point as high as a horse's teeth could reach.

A recent account of the celebrated botanical garden of Buitenzorg, in Java, published by Dr. Haberlandt, of Vienna, speaks with especial praise of the avenues, each composed of trees of a single kind, which divide the garden into sections. One of these is composed of 160 fine specimens of *Canarium* commune, the thick crowns of which form a gigantic arcade, where all interstices are filled by the deep green of thousands of Aroids; another is formed of *Livistonias*, with colossal equal trunks and fan-like crowns ornamented by numberless scarlet fruit-stalks; and a third by *Ficus Benjamina*, whose multiplied trunks and broad expanses of foliage give the look rather of a long-extended wood than of a simple avenue.

Messrs. Frost & Co., of the Genesee Valley Nurseries, in Rochester, write that they received last autumn the following communication from a leading nursery firm in Orleans, France: "Some years since we sent you a plant named *Polygonum Sachalinense*. Have you the plant still? If so, would you be so kind as to dig up all the roots, even if you can get thousands of them, cutting them into lengths of four to six inches, and forward them to us by the first steamer? We will pay you for them, besides your labor, trouble and expense." Messrs. Frost & Co. forwarded a large number of roots by the next steamer. It will be remembered that in our issue for the 20th of September last we called attention to the fact that this Knot-weed was being recommended in several European journals as a forage-plant, and, no doubt, the roots sent by Messrs. Frost & Co. will be used to ensure a forage-supply in regions where nothing better will grow. The *Polygonums* belong to the same family as Buckwheat and Rhubarb, and it is said that when the rhizomes of this species are divided and set a yard apart the surface of the soil will be completely covered in a year or two with abundant forage.

During holiday week fairly good flowers could be bought on the street for almost nothing, although to those who are able to pass discriminative judgment they were neither fresh nor anywhere near the first quality, and prices for choice flowers at the first-class florists were not by any means extravagant. While it was to be expected that retrenchment in every household would begin on the flower-supply, the fact is, that instead of giving costly presents of jewelry or bric-à-brac, flowers, which are always fashionable, have taken the place of these, so that the quantity of cut flowers sold during the holiday season was larger than it was last year, the prices being considerably lower. Of course, there was an abundance of roses, with a wide range of prices, from fifteen cents for dainty buds of *Papa Gontier* to two dollars apiece for American Beauty roses, with stems three and four feet long. Violets continue to be the most fashionable of small flowers, and bunches of a hundred double deep-colored flowers were three dollars. The best carnations sold for seventy-five cents a dozen, Storm King, the favorite among white sorts for its large size and strong stems, commanding a dollar a dozen. Large and showy Prince of Orange marigolds were in limited supply at a dollar a dozen, and flowers of *Lilium Harrisii*, popular for decorative use at weddings, brought two to three dollars a dozen. There was a suggestion of spring in the first forced daffodils and tulips, the latter costing seventy-five cents to a dollar a dozen, and the narcissus twenty-five cents a dozen. Orchids naturally made the richest and most imposing show in the windows of the uptown florists, where they were displayed in great profusion. Flowers of *Cattleya Trianae*, costing from fifty cents to a dollar each, and of *Cypripedium insigne*, which varied in price from two to five dollars a dozen, were most frequently seen, and, oddly enough, large and well-grown flowers of *Cyclamen* were often sold with the Orchids, and even passed under that name among some uninstructed buyers. These cost fifty cents a dozen. Baskets of two or three kinds of flowers, exquisitely arranged with Ferns, were most generally used for floral holiday gifts. In the construction of a bridal bouquet so many spikes of Lily-of-the-valley and forced white Lilacs are used that twenty-five dollars is a fair price for one, and the same amount will buy a dozen sprays of *Phalænopsis*, which are used for the same purpose. Plants sold for New Year's festivities, besides Palms, included well-berried specimens of *Ardisia*, various Heaths in flower, the Jerusalem Cherry, Azaleas and small Lilac-plants in bloom.

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Work for the Municipal Art Society.

THE proposition just made by the Municipal Art Society of this city to decorate, without expense to the city, a portion of the new Criminal Court Building is a definite step in the right direction. Appropriate sculptural and pictorial adornment for our public buildings and parks, when the works are designed and executed under the auspices of such a society and with its approbation, cannot but have an educating influence. The movement is a recognition, if nothing more, of the true position of art as related to civilized communities, and it is a declaration of the truth that the influence of beauty on our daily lives is a genuine need, and that the obligation to provide it for the people is just as imperative as it is to furnish schools or libraries, or pure water or fresh air or rapid transit. This first work of the Society, which will be the beginning, let us hope, of what is to be a long-continued usefulness, will draw attention to itself and the field it is to occupy, and hasten the time when it shall have the standing and command the respect which it deserves, and when its petitions and remonstrances will be heeded both by the people and by the city government.

The duty of this society to advise and criticise in the design of public parks and buildings is plainly higher and more important than to assist in the mere decoration of these works, and, no doubt, the time will come when a protest like that which it made a few weeks ago against the design of the speedway on Harlem River will not be treated with contempt by Park Commissioners. It will be remembered that a plan for this driveway was made by Mr. Vaux, the landscape-architect of the Board, which provided for just such a road as was needed, and included designs for preserving and enhancing the natural beauties of the water-front. For some reason, however, which has never been explained, the Park Department ignored the plan prepared by Mr. Vaux, and ordered the road to be constructed without any walk on the river-border. This exclusion of the people on foot from the bank of the river was aggravated by the fact that the road absorbed land which was already

park territory, and which was valuable because it came to the water-front. No reason with any shadow of force in it was ever assigned for this outrageous legislation in favor of a small class, and no excuse was made for ignoring the design of the consulting landscape-adviser of the department. Since all this is public ground, and since by proper treatment it could be made a most beautiful addition to the city's parks, the Municipal Art Society made a formal protest against the plan itself and against the violation of sound principle and of precedent by the Department in attempting to construct a public work of this sort without consulting its landscape-architect. This protest, however, was brushed aside as if it was of no consequence, and the Park Board has gone on to call for bids to construct the road as they had determined.

The most discouraging feature of this case is that the majority of the Park Board have not the slightest idea that they are outraging public decency by ignoring the claims of art and doing despite to special training and skill. At a meeting, when the report of the landscape-architect was called for, one of these Commissioners asked, impatiently, "What has he to do with it?" Because a worthy and prosperous dry-goods merchant can bid a cash-boy run on an errand, it by no means logically follows that he can order a statue carved or a picture painted or a park designed in the same way. This inability to appreciate the value of taste and training is the very essence of vulgarity, and men of coarse fibre can never be made to understand by argument what every one with any refinement of mind knows by intuition. It is not likely that the Harlem speedway will be built with one sidewalk, but the plan will be changed, not because the Commissioners appreciate the grossness of their offense against the principles upon which all enlightened society rests, but because they cannot face the storm of indignation which will burst over them when the best public opinion of the city is once thoroughly aroused.

The proposal to erect a new Municipal Building in City Hall Park offers another opportunity for the Municipal Art Society to step in to protect the people from the vandalism of the city government. In deference to public opinion, a committee of architects have been empowered to examine a hundred or more proposed plans, and they reported that not one of them all was worthy to be considered. His Honor the Mayor then inquired if the Commission could not shuffle up the different sections of half a dozen of the best plans and patch them together so as to make an appropriate building, and, oddly enough, Mr. Le Brun, chairman of the commission, thought that this could very easily be done. Of course, it is absurd to suppose that any monumental building was ever put together in this way. Does any one imagine that St. Paul's Cathedral or the Capitol in Washington could have been designed after this fashion? Suppose Mr. Atwood, instead of developing the beautiful Art Building in Jackson Park, and directing its growth from one central and commanding thought, had dovetailed together pieces of the other buildings, and then put a roof over them, does any one imagine that the result would have been satisfactory? Of course, a municipal building constructed on the principle advocated by Mayor Gilroy would be a disgrace to an enlightened people; and yet in order to perpetrate this outrage it is proposed to tear down the one public building in the city of which every one is proud, and which is hallowed by the memories of a century. Besides this, the new monstrosity would cover up the only strip of grass on Broadway between Bowling Green and Union Square—that is, on two and a half miles of the most frequented part of the principal street of the principal city of the New World; and that, too, when the lofty buildings which are piling up about City Hall Park will make its immediate neighborhood the most densely populated spot in the world. No tenement district can compare with it in population during the day-time, and yet the city is tearing down blocks in other parts of the city in order to provide small parks for the people. In no spot on Manhattan Island, certainly, is there more need of open

space and a glimpse of verdure than there is about the City Hall. Surely the Municipal Art Society, the Historical Society and every other organization of people who make any pretense to cultivation or refinement, and every man or woman who has the slightest regard for the history, the honor, the health or the beauty of the city ought to protest against this backward step toward barbarism.

Josiah Gregg.

IT is remarkable that so little is now known or remembered of this man, who in his time made important contributions to the knowledge of the natural history of an interesting region, and who wrote a work of enduring interest, describing, as it does, one phase of American commercial activity, all knowledge of which without his narrative would have passed out of the knowledge of man with the picturesque race of hardy pioneers that it brought into existence.

The name of Josiah Gregg does not appear in the dictionaries of authors or of biography. The date and place of his birth are not known to this generation, and all that can be gathered of his early life is found in the preface of his book, in which he tells his readers that he was "cradled and educated upon the Indian borders" and that he had been "familiar with the Indian character from infancy." Ill health, he tells us, too, first induced him to cross the prairies, and to this journey, which was followed by several others, and to a long residence in northern Mexico, we owe *The Commerce of the Prairies*, a book in which can be found the only good account of the prairies and plains of the continent, and their commerce and population; and, although it is, perhaps, as a collector and discoverer of plants that Josiah Gregg is most interesting to the majority of our readers, so much of the true spirit of his life is told in the following letter which Mr. John Bigelow, of this city, has written at our request, that it cannot properly be withheld from publication:

It gives me pleasure to comply with your request for such information as I can furnish about Mr. Josiah Gregg and my humble part in the preparation for the press of his *Commerce of the Prairies*.

I owed the acquaintance of Mr. Gregg to the late William Cullen Bryant, to whom, in 1843, Mr. Gregg applied for a reference to some competent person to revise some notes of his and put them in shape for publication. Mr. Bryant advised him to call upon me. I found Mr. Gregg to be at that time a man about forty years of age and about five feet ten inches in height, though from the meagreness of his figure looking somewhat taller; he had a fine head and an intellectual cast of countenance and temperament, though his mouth and the lower part of his face showed that he had enjoyed to but a limited extent the refining influence of civilization. He had fine blue eyes and an honest, although not a cheerful, expression, due, as I afterward learned, to chronic dyspepsia. He was withal very shy and as modest as a school-girl.

We were soon at work together. He had previously confided his notes to Count Louis Fitzgerald Tasistro, subsequently and for many years a translator in the State Department at Washington, but their views of the way in which the work they were engaged upon should be executed were so widely divergent that their partnership was speedily dissolved. As I became more acquainted with Mr. Gregg I had no difficulty in discerning the cause of their incompatibility. He had no notions of literary art and he knew it, but he was morbidly conscientious, and nothing would induce him to state anything that he did not positively know as if he did know it, or to overstate anything. Tasistro had no such infirmity. Then Gregg had about as little imagination as any man I ever knew, while Tasistro had such an excess of it that he had no difficulty in believing and affirming things that never happened. It was not strange, therefore, that they soon parted with opinions of each other not in the least improved by their association.

I soon found that all I had to do was to put his notes into as plain and correct English as I knew how, without in the least modifying the proportions of his affirmations. He would not allow his version of a fact to be expanded or contracted a hair's-breadth, no matter what might be the artistic

temptation, nor however unimportant the incident; he always had the critics of the plains before his eyes, and would sooner have broken up the plates and reprinted the whole book than have permitted the most trifling error to creep into his description of the loading of his mules or the marshaling of one of his caravans.

Although Mr. Gregg's early education had been limited and his reading not extensive, he had a vague notion, not unnatural to a frontier man of reflection, that there is no fame so enduring as authorship, nor any way in which a man may multiply himself so many times by the forces of other men as by writing a book. His whole soul, therefore, was completely absorbed in the work upon which we were engaged, as if it involved the destiny of empires. He had no family; he had a competence for all his moderate wants, and he dreamed of a fame from this work which should place him among the authors of his generation and compel his acquaintances to look up to him as he himself was accustomed to look up to those whose writings had delighted or instructed him.

Mr. Gregg had his lodgings at the Franklin Hotel, then standing on the corner of Broadway and Liberty or Cortlandt Street, and in his room there he spent pretty much his whole time, when not eating or sleeping, upon his manuscript and proofs. He rarely went out, except to the store of his publishers under the Astor House; he never went to the theatre, or, indeed, to any place of amusement. He took no recreation of any kind so far as I could learn. He did not appear to visit anywhere, nor did he appear to have any acquaintances. His heart was wholly in his book; it was his joy by day and his dream by night. His stay and life in the city during its incubation was his great trial. He pined for the prairies and the free open air of the wilderness. New York to him was a prison, and his hotel a cage. Whatever value his book possesses—and as a history of the trans-Mississippi commerce before the invasion of the railway, it has, I think, great and enduring value—was due to him and to him only. My laundry work added no more value to it than the washing and ironing adds to the value of a new garment.

Nowhere in all our literature can be found so full and entirely reliable an account of our early transcontinental commerce, and of every kind of life that flourished over the territory which it traversed, as in *The Commerce of the Prairies*; and the time is not distant when very little can be learned of the condition upon which that commerce was conducted, except from his book. It was favorably received by the public, and in due time reached a second edition. His publishers were unfortunate, and I doubt if Mr. Gregg ever derived any pecuniary advantage from his literary venture; that was a secondary matter with him, though there were some circumstances connected with his failure to receive the pecuniary returns to which he was entitled that did not enhance his respect for the publishing trade, and may have strengthened his preference for the frontier life and the unsophisticated dwellers of the wilderness.

Mr. Gregg's interest in botany can, perhaps, be traced to his intimacy with Dr. Engelmann, who lived in St. Louis when it was the starting-place for all expeditions across the plains, and who speaks of him as "an indefatigable discoverer and my friend." His principal botanical collections were made between Chihuahua and the mouth of the Rio Grande, particularly in the neighborhood of Monterey and Saltillo in Nueva Leon, a region which only one botanist explored before him—Jean Louis Berlandier, a Belgian, and a pupil of the elder Candolle, who first reached Mexico in 1828, and resided until his death in the city of Matamoras, where he established himself as an apothecary.

Mr. Gregg discovered many undescribed plants, and his name is connected with several interesting species of the Rio Grande valley, among them *Acacia Greggii*, *Cereus Greggii*, *Fraxinus Greggii*, *Sargentia Greggii*, *Linum Greggii* and *Porophyllum Greggii*. Twice the generic name of *Greggia* has been proposed in his honor, but as an older *Greggia*, now reduced to *Eugenia*, already existed, the name of Josiah Gregg, under the present ruling of American botanists, cannot be commemorated in a genus of plants.

Of the death of Mr. Gregg as little is known as of his life, and the only printed notice of it we have been able to find is contained in the first part of Asa Gray's *Plantæ Wrightianæ*, written in 1850, in which allusion is made in the preface and on page 9 to Mr. Gregg's death in California from "overexertion in scientific investigation in the interior."

Native Plants for Florida Gardens.

THE hummock woods and swamps of Florida are rich in ornamental trees and shrubs, and the sandy Pine-lands and flat-woods are rich in perennial and herbaceous plants. The beauty of the evergreen leaves and large flowers of the Magnolias, the delicious perfume of the Carolina Jessamine, the penetrating odor of the Spider Lily, all growing in the rich black soil on the edges of the lakes; the singular beauty of Holly, *Icacorca paniculata*, *Myrsine Florida* and Cherry Laurel, the stateliness of the Loblolly Bay, the grandeur of the Live Oaks, the tropical picturesqueness of the Palmettos, always bring delight to any visitor here who loves nature. All of these and many other plants grow easily on dry Pine-land in Florida if transplanted from the hummock woods; but, as a rule, we see nothing but Orange-trees and white sand around the houses of the settlers. Nobody seems to think that there is abundant material for ornamental planting so close at hand. Now and then we see an Oleander, a Gardenia or a Hibiscus, or a few clumps of *Crinum*s, which are invariably called Lilies, but very few native trees, shrubs or herbaceous plants. Settlers from the north often attempt to grow their old garden favorites, but the Snowballs and Lilacs, Bush Honeysuckles and *Spiræa*s, the Hollyhock and *Pæonia*s generally fail, although the ordinary *Philadelphus* usually grows well.

Such native trees as the Magnolia, *Gordonia*, Live Oak and Red Bay, Holly and many others which love rich moist soil will grow well on the sterile Pine-land when care is taken to plant them properly and fertilize and water them afterward for a time when necessary. The instructions which I can give on this point I received originally from Mr. Walter N. Pike, who has derived them from actual experience, and since then I have proved their value by personal trial. The earlier the plants are obtained in winter the better, and some commercial fertilizer will always be beneficial in helping them to start. Even a few shovelfuls of hummock-soil, mixed with the ordinary sand and placed about the roots, will be found very useful, since a great deal depends on their first growth. Heavy mulching should never be neglected in Florida about newly transplanted plants, not only for immediate effect, but for carrying them through the drought, since the mulch not only arrests the escape of moisture, but keeps the soil cool. Of course, newly set trees and shrubs should be watered well and the soil should be trodden firmly about the roots. It is always best to have a rim of soil raised about the trees with a hoe, so that they set in a saucer-like depression from four to six feet in diameter, and this circle should be at once covered with mulch, and the mulch should be weighted down. The roots are then in damp, cool soil, beyond the baking power of the sun's rays when the dry season comes. If the tree then droops, two or three pails of water must be poured into this depression, and each pailful should be allowed to soak away before another is added. Some exotics, like *Michelia fuscata* and *Thea Bohea*, are benefited if a little clay is mixed with the soil about the roots, and perhaps the same would be true of many native plants, but *Magnolia foetida* grows like a weed when transplanted to high Pine-land, and so does the Holly, *Ilex opaca*, when lifted from the hummock to a hungry soil of sand.

It is small trouble to collect these trees, and with a single companion I once collected in one day in the latter part of October most of the trees and shrubs which I shall now name as desirable ones. *Andromeda nitida* is a singularly elegant shrub, found in peaty soil near the water. It grows five or six feet high, has thick, shining fragrant leaves, and in April is covered with pendulous clusters of white and fragrant blossoms hanging from the axils of the leaves. The nearly allied *Leucothœ racemosa* is found in similar locations and grows to a height of ten feet. Its dense racemes of twenty to thirty white bell-like flowers appear early on the naked branches. These plants were removed

with balls of soil about the roots and transplanted to the edge of a small lake. Native Ferns were planted among them and other species of *Andromeda*. I had not yet learned the necessity of mulching, and every one died, although I have since had success with these and other plants of the Heath family. Trees of *Magnolia foetida*, owing to their lack of fibrous roots, are difficult to transplant, but I obtained a few of these and they are now all growing well. All the Magnolias are easily raised from seeds and make a rapid growth on high, poor Pine-land if a little fertilizer is worked about them. Four years from the seed they will be specimens ten feet high, making a solid mass of lustrous foliage to the ground, and I have seen trees of that size which flowered freely. The Loblolly Bay needs the same treatment. *Myrsine Florida* is a small broad-leaved evergreen tree, which, like the Holly, Loblolly Bay and Magnolias, never shows its full beauty in the woods where it lives in a constant struggle with coarser trees. When planted alone, however, it makes a conspicuously beautiful object, having a perfect form and very dense foliage. *Magnolia glauca*, which is almost as desirable as the Big Bay, will thrive under the same treatment. The Silver Bush, *Leucophyllum Texanum* (see GARDEN AND FOREST, vol. iii., p. 488), is one of the most conspicuous objects on my grounds. I have seen this shrub growing abundantly in western Texas on dry and barren soil as a spreading shrub five to ten feet high and flowering at intervals from May to October after every heavy shower. These thimble-shaped, rosy flowers, when seen among the woolly leaves of an ashy-gray color, are exceptionally beautiful. It transplants readily and can be cut to any desired form.

Many other native trees should find a place in every Florida garden. The sweet-leaved *Symplocos tinctoria* is one of the prettiest small evergreen trees of the south. *Ilex Dahoon* is a beautiful evergreen shrub. The Wax Myrtle, *Myrica cerifera*, here is another evergreen which is very pretty and interesting. The American Olive, *Osmanthus Americanus*, a beautiful southern forest-tree, which attains a fine form, and is densely covered with foliage when planted in the garden. The Sea Grapes, the common name for two species of *Coccoloba*, are also desirable broad-leaved evergreens, while the Virginia Fringe-tree, the Flowering Dogwood, *Itea Virginica*, *Calicanthus floridus*, the Palmetto and many more could be used to make a garden of native plants in Florida a most interesting and delightful spot.

Milwaukee, Wis.

H. Nehrling.

Plant Notes.

The Cocconut-tree.

ON page 15 of this issue a photograph of a garden in Key West, shaded by a grove of Cocconut-trees, is reproduced. This Palm does not grow spontaneously on Key West or on any of the other Florida islands, as the violent north winds which often prevail in winter reduce the temperature of southern Florida too low for this heat-loving tree, although when planted and cared for while young it grows to a moderate size on the keys, and sometimes bears fruit; otherwise the nuts which are cast upon those shores by the Gulf Stream would have produced plants that would gradually have covered them, for it is in this way that the Cocconut has been able gradually to spread over all the sandy coral shores of the tropics of the two worlds. The place of its first home is uncertain. It was believed by the younger Candolle to have first appeared on some of the islands of the Indian Archipelago, whence it was carried either by ocean currents or by man to the southern coast of Asia, east tropical Africa, and to the islands and shores of Pacific tropical America. Undoubtedly it was brought by man to the West Indies and Brazil after the discovery of America by Europeans, although it has now so spread, through the action of ocean currents or by the agency of

man, that it has every appearance of being indigenous on the shores of east tropical America.

The Coconut Palm is a magnificent plant, well named "a prince of the vegetable kingdom," with tall slender columnar stem eighty or a hundred feet high, and rich pale yellow-green leaves which are thirty or forty feet long and flutter and rustle with every breath of wind.

The Coconut grows only near the shore, where its roots penetrating the sandy soil may drink freely from clear underground springs. Of all trees it is the most useful to man, furnishing food, shelter and employment to hundreds of thousands of the human race. In tropical countries, especially in southern India and in Malaya, the Coconut supplies to whole communities the chief necessities of life. Every part is useful; the roots are considered a remedy against fevers; from the trunk houses, boats and furniture are made; the leaves furnish the thatch for houses and the material from which baskets, hats, mats and innumerable other articles are made; the network of fibres at their base is used for sieves and is woven into cloth; from the young flower-stalks a Palm-wine, called toddy, is obtained, from which arrak, a fiery alcoholic drink, is distilled. The value of the fruit is well known. From the husk, which is called coir, commercially, cordage, bedding, mats, brushes and other articles are manufactured. In the tropics, lamps, drinking-vessels and spoons are made from the hard shells. The albumen of the seed contains large quantities of oil, used in the east for cooking and in illuminating; in Europe and the United States it is often made into soap and candles, yielding, after the oil is extracted, a refuse valuable as food for cattle, or as a fertilizer. In some parts of the tropics the kernel of the seed forms the chief food of the inhabitants. The cool, milky fluid which fills the cavity of the fruit when the nut is young, affords an agreeable beverage, and the albumen of the young nut, which is soft and jelly-like, is nutritious and of a delicate flavor.

As might be expected in the case of a plant of such value, it is often carefully and extensively cultivated in many countries, and numerous varieties, differing in the size, shape and quality of the fruit, are now known. The Coconut is propagated by seeds; the nuts are sown in nursery-beds, and at the end of six or eight months the seedlings are large enough to plant. The plants are usually set twenty-five feet apart each way in carefully prepared beds filled with rich surface-soil. Once established, a plantation of Coconuts requires little care beyond watering, which is necessary in its early years to ensure a rapid and vigorous growth. In good soil the trees usually begin to flower at the end of five or six years, and may be expected to be in full bearing in from eight to twelve years. Thirty nuts from a tree is considered a fair average yield, although individual trees have been known to produce an average of three hundred nuts during a period of ten years. An application of manure increases the yield of the trees, although, probably, the value of the additional crop obtained in this way is hardly large enough to justify much expenditure.

In recent years the Coconut has been cultivated on a very large scale in British Honduras, Jamaica and other parts of Central America, as well as on the northern coast of South America and the West Indies. The consumption of coconuts in the United States has become very large, as many as twenty millions being imported to this country every year. They are brought largely in steamers with other cargoes, although there are sailing vessels engaged in this trade exclusively, and last month two schooners discharged in this city, respectively, 170,000 and 260,000 nuts. Those which come from San Blas are considered the most desirable, since they shell more easily, while the meat is richer in oil and retains its flavor longer than others. Those from Baracoa are larger, but they lack oil and flavor, and cost less. After they are unloaded the nuts are sorted here and divided into three grades, according to size. The present price for select nuts from San Blas is \$28.00 a thousand,

from Jamaica \$25.00, and from Baracoa \$20.00, while the other grades are correspondingly lower; the lowest class, known to the trade as "eggs," brings only \$10.00 a thousand. More than one-half of all the coconuts imported are bought by the confectioners, a single firm in New York using as many as forty thousand a month, and it is possible to fill this large standing order because importations are made all the year round. Of the remainder the larger portion goes to the desiccating establishments, while only a few are now sold in the stores in their natural condition.

The Mexican Ash.

OF the beautiful Mexican Ash, *Fraxinus Berlandieriana*, Mr. C. G. Pringle, who has lately returned to his home in Vermont from another successful Mexican journey, chiefly devoted to exploring the flora of the state of Jalisco, writes:

In October I visited Michoacan once more, and made a longer tour than ever before through the mountainous regions beyond Patzenaro. There, at last, I found the Mexican Ash in its native habitat. It was nowhere abundant, but widely scattered over the hills and in various situations, quite in the way of *Fraxinus Americana* on the hills of Vermont. Similar conditions to these in which I found the Ash extend eastward from Michoacan through the states of Mexico and Puebla and Hidalgo on the left-hand, and Guerrero and Oaxaca on the right; and, without doubt, the range of this species extends through the highlands of all these states. As might be expected, its size when growing in natural conditions was not very large.

In the cities of the Mexican table-lands, excepting in Chihuahua, no species is so much planted in parks, plazas and avenues as this Ash. Along streams beyond the city limits it is to be found, probably disseminated from the town-planted trees. It is worthy of being so generally used in plantations, for it attains noble dimensions and presents a broad head of dense dark green foliage. The color of the bark is darker than that of *Fraxinus Americana*; it is hard, only an inch or an inch and a half thick even on the oldest trees, and its furrows are shallow, interrupted and about an inch apart. The largest specimen I have seen overshadows half the plaza in the city of Guadalajara; it is about fifty feet tall, and the trunk, five feet above the surface of the soil, has a circumference of 17½ feet. The trunks of two specimens which form part of a long avenue of venerable trees in the same city measure respectively 13½ feet and 11½ feet in circumference.

It is this Ash which visitors through the valley in which stands the city of Mexico always admire, and which they speak of as one of the most beautiful of shade-trees.

Foreign Correspondence.

London Letter.

VITIS COIGNETIÆ.—Considerable interest in this plant has been aroused in England since it became known that it is the same as a vine which has been in the collection of Mr. Anthony Waterer, at Knap Hill, many years, and which, while it has delighted every one who has seen it in its brilliant autumn colors, has persistently refused to be propagated. The Knap Hill plant is an enormous specimen, and clammers over a building and an old tree-trunk, and the brilliant red of its thousands of large leathery leaves in September or October is worth going a long way to see. A well-known English amateur who had lately seen the plant at Knap Hill came to Kew to inquire about it, for, to use his own language, he "could not sleep since he saw the plant and was informed that he could not obtain a specimen of it." The information recently published in *GARDEN AND FOREST* concerning *V. Coignetiae* has this week been copied into the *Gardeners' Chronicle*. The plant is certain to become a favorite here.

PUERARIA THUNBERGIANA.—The magnificent specimen of this plant represented in the picture in *GARDEN AND FOREST*, vol. vi., p. 505, is likely to call the attention of horticulturists to its value as a hardy climber. I have known the plant about ten years, but never saw it except at Kew,

where it used to be grown against a south wall outside. Here it grew as fast as a Kidney Bean in summer, and died down to the ground every winter. It was lost in an attempt to establish it against a tree-trunk. At that time we called it *Dolichos Japonicus*. About five years ago we obtained seeds of it from Japan under its correct name, and there is now a strong plant of it in the large temperate house or winter garden, where it sends up annually stems which grow thirty feet or so in a season, and bear very large rich green trifoliate leaves. Here, however, the stems are annual, although frost never reaches the plant. It has never flowered at Kew. A specimen of it in flower was sent to Kew for determination in October, last year, gathered from a plant grown in a stove in Scotland.

soon fall if cut and placed in water. There are eight or nine petals in each flower, which consequently have a semi-double appearance.

COSTUS IGNEUS.—I ought to have included this with the plants mentioned in my last letter, as specially interesting among those shown and certificated at the last meeting of the Royal Horticultural Society. Although introduced at least ten years ago by Mr. Linden, and figured in the *Botanical Magazine* eight years ago, from plants flowered at Kew, it was generally looked upon as a new plant by those who saw the group of beautifully grown specimens of it shown a few days ago by Sir Trevor Lawrence. It is a native of Brazil, where it appears to be common. Under cultivation it forms a compact tuft of herbaceous



Fig. 2.—The Coconut-tree on Key West, Florida.—See page 13.

JASMINUM GRACILLIMUM.—This is an excellent winter-flowering shrub for the warm house. At Kew it is trained on the south side of a glass partition in the Begonia-house, where it has been for several weeks, and is still, crowned with large branches of white star-like sweet-scented flowers. It was discovered in Borneo by Mr. Burbidge, when collecting for Messrs. Veitch & Sons, who first flowered it in 1881, when it was described by Sir Joseph Hooker as the most distinct of all the many Asiatic species of *Jasminum*, and more floriferous and attractive than any yet known. When it was first shown by Messrs. Veitch, it was in the form of a shrub, 3 feet high, crowned with elegant branches, all weighed down by large clusters of bloom. On the plant the flowers last well, but they

stems about a foot high, clothed with rich green lanceolate leaves and terminated by a head like cluster of green sheaths, from which flowers are developed in succession and profusely all the summer and autumn. The flowers are three inches across, flat, elegantly waved and crisped along the margin, and colored rich glistening orange yellow.

LACHENALIA AUREA, var. *GIGANTEA*.—This is a plant which, for garden purposes at any rate, deserves a distinctive name, as it is far superior to the type as generally cultivated, which rarely has a dozen flowers on a spike, whereas the variety *gigantea* has from twenty to thirty flowers, which, moreover, are half as large again as the common form of *L. aurea*. There is a group of plants of the variety

in flower in the Cape-house at Kew, some of the spikes being fully fifteen inches high, and clothed two-thirds of their length with large fleshy flowers of the richest old-gold color. I should place this first among cultivated *Lachenalias*; it is superior to the hybrid *L. Nelsoni* in the purity of its color. There is also a group of the handsome *L. pendula* in flower in the same house, the drooping tubes of which are red, tipped with green and purple. These are invaluable plants at this time of year.

W. Watson.

Cultural Department.

The Russian Cherries.

IT is rather remarkable that more is generally known about the large than the small Russian tree-fruits. At least, it is only of late that we are getting hold of full and satisfactory information about both the Plums and Cherries brought to this country from Russia some ten years ago. I received a few small plants of these not long afterward, and planted them about where I could find vacancies in my Apple orchard, and these proved themselves hardy, but not productive. This has been true of all Plums and Cherries so planted, and as in Russia they are both very productive, and as growers in the west do not complain in this respect, I came to the conclusion that the Plums and the Cherries should each have a place by themselves. Four years ago I received from Professor Budd a liberal supply of yearling trees of both species, and following his advice they were planted rather closely, twelve feet one way by twenty the other, and last summer they began to produce fruit quite freely. Little Cherry-trees, less than four feet high, gave me one to two quarts each. The trees, however, are not all dwarf; but, so far, I find it is the dwarf forms that bear the largest and best cherries.

These Russian Cherries and Plums, it should be well understood, were selected by Professor Budd, of Iowa, and Mr. Charles Gibb, of Canada, during their pomological expedition to Russia in 1882, and imported the following spring. Some of these varieties have since been imported by other persons, and the list of these Russian fruits in this country is now a long one. Much of the wood of the early importations was used for propagation, and the effect of this was so unfavorable to the necessary development of fruit-bearing on any sufficient scale to give ground for exact knowledge of qualities, actual or comparative, that we are still surprisingly ignorant of facts as regards special varieties. The first report of any considerable fullness on the subject is that of Mr. John Craig, a horticultural pupil of Mr. Charles Gibb, and subsequently of Professor Budd, who is now in charge of the horticultural department of the Dominion Agricultural Bureau, at Ottawa. Mr. Craig's report was issued in November, 1892; and although this was ten years after the selections were made in Russia, it is based upon results in an orchard just beginning to produce fruit in any considerable quantity. Of course, this is not said with any idea of criticism upon the delay. The most important duty was plainly to propagate the varieties as rapidly as possible, disseminate the young trees as widely as possible, and then to collect and compare the reports of results. The next three or four years will add enormously to our practical knowledge in this line. The early plantings of single trees, here and there, like my own, already referred to, have, indeed, given us older and larger trees; but their unfruitfulness has left us still uncertain as to what might be the results under proper conditions.

The varieties here reported upon were, in the main, personal selections made from an extensive list by Professor Budd, although a few were from the stock of Ellwanger & Barry and others who are propagating these fruits commercially. It is proper for me to say that I am not doing this myself. At Ottawa the first fruits were picked in 1890 from trees set in 1887. The soil is a sandy loam, fertilized with barn-yard manure and leached ashes, and the growth of the trees has been healthy and vigorous. In 1892 forty varieties fruited, many yielding full crops. They were all Dukes or Morellos, or hybrid forms between these. As is known, the Dukes are strong upright growers, while the typical Morellos have round tops, with smaller leaves and slender drooping branches, but intermediate forms are numerous. Mr. Craig gives us a number of photo-engravings of varieties of natural size, very well done. The first illustration is of Early Morello, Amarelle Hâtive, bearing a full crop the fourth year from planting. Ripe at Ottawa July 10th. Fruit large; skin dark red; stalk long, in a deep cavity; pit medium to large; flesh well tinged with red; quality good.

Bessarabian, said to be of an Asiatic race. As a rule, names, however, are not reliable indications of origin. Fruit medium to large; in pairs, bright red; flattened sidewise and at apex; stalk long, in a deep cavity; flesh firm, dark red, sub-acid, without astringency when ripe; pit small and round; ripens at Ottawa the first week of August; tree a free grower; strictly hardy.

Brown Bruxelles, a favorite and successful variety at Moscow. Fruit large, heart-shaped, almost black; flesh firm, high-colored, acid; a favorite variety in the Warsaw market; tree a free, open grower; closely resembles the Shadow Amarelle, mentioned below; ripe August 10th.

Double Glass, very distinct, upright tree, with large prominent buds; fruit of largest size, heart-shaped, with deep suture; stalk thick, not long; flesh yellow, juice uncolored; ripe end of July; not strictly iron-clad at Ottawa.

Frauendorfer Weichsel, very hardy and productive; small to medium, fair quality; ripe end of July.

Griotte du Nord, from Silesia; fruit medium to large, dark red, spherical; long slender stalks in pairs; flesh highly colored, juicy, acid, but pleasant; pit medium; a slow grower. Griotte Imperial, hardy and productive; a slow grower; fruit medium to large; skin dark red; juice deeply colored, quite acid, rich; ripe by the middle of July.

Orel No. 25, one of several varieties obtained from Orel, Russia, by numbers. This, which appears the most valuable, is large, heart-shaped; light red, with uncolored juice; flesh tender, very juicy, sub-acid; ripe first week in August; tree vigorous, upright, hardy. A valuable late Cherry.

Vladimir. This Cherry attracted Mr. Gibbs' attention more than any other which he saw in Russia. Its cultivation has attained vast proportions in the province from which it gets its name. The tree is exceptionally hardy, and it is proving very productive on light soils in Ontario. Fruit medium to small, borne in clusters of two to four; skin nearly black; flesh firm, with a sprightly acidity. Seedlings of Vladimir in Ottawa show a more perfect adaptation to the climate than the original stock.

Shadow Amarelle, so called from its mirror-like surface reflecting exterior objects. This is a vigorous and productive late sort, ripe early in August. A considerable number of this class is quite dwarf, with compact round heads; bears while young, and with wonderful profusion. These Russian Cherries bid fair to make cherry-growing for market a profitable business in the cold north.

Newport, Vt.

T. H. Hoskins.

Carnations.

MRS. FISHER still continues the best white Carnation here for any purpose. It possesses a strong constitution, and is an abundant bloomer, being equally profuse in summer as winter. The flowers are of the largest size, excellent form, well fringed and very fragrant. In the depth of winter, and especially during cool weather, Mrs. Fisher comes slightly tinged with pink. This, at Wellesley, Massachusetts, at first was considered a detriment, but Mr. Tailby tells me he sells all he can get of this flush-tinted variety, and a mass of them which I lately saw made a charming appearance. The plant is easily propagated, and so far has proved rust-proof. Ferdinand Mangold is an equally good crimson. It is an ideal flower, which all raisers of new varieties strive to attain. If it has a fault, it is that it is difficult to propagate. There is not quite such unanimity of opinion about the scarlet varieties. Hector takes the lead here. Its strong constitution, fine bright color and good stiff stems are its most important qualifications. It is not, however, as prolific as Portia, and though the flowers are larger, they are somewhat inclined to burst. Lilian Abbe is a new and very promising scarlet. It is somewhat similar to Florence, once the stand-by, but has a much better stem. So far as I have seen, it is perfectly healthy. Nobscot is another new variety, which has been grown by the raiser, Mr. Nicholson, of Framingham, Massachusetts, for summer use. It is a free and continuous bloomer; the flowers are of perfect form and fine color, but lack size. The best bright pink so far is William Scott. It is nearer to Grace Wilder than any variety yet raised. It has all the merits and none of the faults of Grace Wilder, which seems to have developed an impaired constitution during late years, a weakness seen in a loss of color and a tendency to rust. Ada Byron, the new bright pink, is really a pink Mrs. Fisher, and is a seedling of that variety raised by Mr. Fisher, of Framingham, Massachusetts. It is identical with the parent-plant in every way except in color, and to those who know the parent, nothing more need be said in the way of commendation. The new William Nicholson is a fine reddish pink, and is probably the largest and most prolific variety with this shade of flowers, which have hitherto been shy

bloomers. Mr. Nicholson has put these varieties to a thorough test to determine their tendency to disease, having planted them among a batch of Golden Triumph, which are rusted beyond redemption.

The various forms of Carnation disease, and that principally known as rust, are attracting considerable attention; in fact, it is becoming a serious matter to growers everywhere. No sure cure has been discovered, although various remedies have been applied by different growers; and while some may have been successful, it is far more probable that cleanliness, a little fire-heat, and, consequently, a drier atmosphere, has done more than anything to check it. For my own part, I can say I have tried almost everything recommended except "Fostite" and common salt. Those who have the good fortune to be moderately free from it, think they succeeded with a pinch of salt in solution, sprinkled on with a watering-pot, and another is equally sure he manages it with tobacco-dust and sulphur, while a third declares that panacea for all the ills of plant-life, Fir-tree oil, has solved the problem for him. But I am acquainted with others who happened to have their plants badly affected who failed with all these, and in nearly every case the plants are growing out of it after all attempts to eradicate the disease with fungicides had been abandoned. The majority of growers and raisers agree that salvation lies in selecting sorts which are free from disease. So far, several varieties have shown no tendency to rust even when planted near to affected plants. Ferdinand Mangold is a noteworthy instance of this. Many others could be named. Some growers date the appearance of the disease in their establishments to buying infected plants, and while this, no doubt, has been the means of spreading it, it has been generally noted hereabout that the disease appeared first in the open ground; and on examining many weeds, and particularly grasses in pastures, abundance of rust could be found; in some cases quite near to the Carnation-patch. It will thus be seen that the matter is a serious one, since fungal diseases may be carried by winds for a considerable distance and quickly spread over the whole country.

Wellesley, Mass.

T. D. Hatfield.

Some Saxifrages.

THE Saxifrages are interesting, hardy plants, mostly alpine, which are usually very amenable to garden-culture, either on the rockery or in a suitable position in the borders. They form a very numerous family, as there are now reckoned some 184 species in sixteen sections, with many varieties. Botanists and cultivators have confused the names somewhat, so that considerable care is requisite in forming a collection which shall be truly named. The smaller Saxifrages are particularly desirable for the rockery and for borders, where small and interesting plants are appreciated; with suitable planting they are easily established and reliable, and are attractive at all seasons. To name a few, *S. Burseriana* and variety known as Major are fine winter-flowering plants. They form small masses of small-spiked rosettes, dark green and slightly silvery. The flowers are white and expand from crimson buds, and they appear on short stems and almost hide the plant. A choice variety of this sort is called *Boydii*, which does not seem as reliable as the type, at least my rosettes have gone backward. *S. luteo-purpurea* is a yellow-flowered species of the same section, flowering slightly later. *S. sancta* has also mossy rosettes, with deeper yellow flowers. The encrusted Saxifrages are delightful as well as curious plants; the glaucous encrusted leaves form striking, regularly formed rosettes, from the centre of which, when mature, rise stems furnished with numerous attractive flowers. *S. minima* carpets the ground with numerous minute rosettes about a quarter of an inch in diameter, and from this species to the gem of the section, *S. longifolia*, which is said sometimes to produce rosettes even a foot in diameter, there are varieties with rosettes of various sizes and forms. These usually have serrated and encrusted edges to the leaves, and are objects of special interest under the microscope. *S. Aizoon* is probably the best-known species of this character, and makes nice cushions of compact small rosettes. *S. pectinata* is a variety with very distinctly toothed small leaves, and encrusted; the rosettes are from a quarter of an inch to an inch in diameter. *S. lanceolata* has lanceolate leaves and rosettes of rather open form. *S. Cotyledon* is a large rosetted form, which seems rather easier to establish than either *S. McNabiana* or *S. longifolia*, which are considered the gems of the larger varieties. These are apt to damp off here in a flat border which holds the requisite amount of moisture, and they should preferably be planted in the rockery or on a wall in a vertical position where no moisture will lodge in the leafy rosettes. *S. La Ga*

Dauphana is an interesting form, the globular rosettes of which are rose-tinted. It makes compact masses. The silvery-moss Saxifrage, *S. cæsia*, is a distinct form, with tiny balls or round rosettes of short, hard encrusted leaves, which are prettily colored a lavender-gray. *S. aretioides* is a larger form with a darker crust. This encrustation appears to be formed of lime in crystals. The Saxifrages with toothed or horn-like leaves, like *S. Lindsayana* and *S. nervosa*, are bright plants, which flower well, and the foliage is light green. Probably the hybrid, *S. Wallacei*, is the best plant of this section; it produces a profusion of charming pure white flowers of good size, but has a rather bad habit of hardening up its stems and losing its lower leaves. My helper has several times tidied it out of the garden, so that I have not been able to test its wintering qualities.

These are only a few of the Saxifrages which are to be had readily, and are likely to please those interested in such things. As to their culture, they usually need good loam, with plenty of sharp stones or grit free from decaying vegetable-matter or manure. They require a position where their roots can always find a supply of moisture, and in such a place they will endure strong sunshine. It seems quite hopeless to try to carry them through one of our dry hot summers unless they are well established, and unless the plants when received are strong, it will be better to retain them in pots in a frame until cool nights come. Guided by a little experience, I grow any new kinds which come to me in pots in a cool house until the stock can be divided, and then I venture a piece at a time outside at a favorable season. This is a practice which requires considerable patience, as they do not increase with great rapidity. Some of my friends seem to consider the cultivation of such little gems impractical, and one candidly remarked only the other day that some of my notes were tinged with the same un-American trait. To my mind, the practical gardener is one who grows plants which interest him and give a profit of mental pleasure. This pleasure may be very much diversified, and does not always depend on the special plants or flowers, these being merely details often of the play. Very much of the pleasure of any garden will consist in the light in which it is viewed, and this light will depend on the one who views. A good imagination is indispensable to a gardener who wishes to secure the best result from his plants. To see only the bald features of a plant, without light or shade, is no more satisfying than the view of so much merchandise. There is as much excitement in collecting and growing plants as in hunting for "first editions" or in any other of the fads which entertain mankind, but it is a curious fact that so impressed is the average person with catalogue plants, florists' flowers and eatable things that it seems difficult to impress the average man with the fact that the cultivation of other things can pay, and that one's leisure hours may be practically passed at work which brings no coin.

Standing among a few hundred *Chrysanthemum*-plants, to which I mentally pointed with pride, one of my neighbors asking about the plant, frankly said, "Well, you could have a nice garden of corn and peas here." Another friend advises me to be practical and go in for grapes, which I can buy for nothing a pound; and for pears, not knowing that three Pear-trees in our garden furnish us with an annual loathing for this fruit. My idea of a practical garden, without further illustration, is one which is filled with plants which interest the owner, and these are more likely to be interesting the further one gets away from typical market flowers, though these, of course, are not to be neglected entirely.

Elizabeth, N. J.

J. N. Gerard.

Work in the Greenhouse.

WITH the arrival of the new year comes a quantity of work that is best done at this period, and seed-sowing and propagation can now be carried on under exceptionally favorable conditions. Small seeds, such as those of *Gloxinias*, *Begonias*, *Streptocarpus* and many others which are slow to germinate, are best sown now. Small seeds, such as those named, should never be covered with soil, but sown on the surface after the soil has been made moderately firm and quite level, and after it has been thoroughly watered. A gentle heat under the pans or boxes will materially aid germination and assist the young plants in the earlier stages of their growth. It is often recommended that a sheet of glass be placed over the pans or boxes after the seed is sown, and this is beneficial when care is taken to guard against the fungus-growth peculiar to boxes of choice young seedlings; unless the condensed moisture is carefully wiped from the glass every day, the result of much care is sometimes swept away in a few hours.

If *Cyclamen*-seeds have not been sown earlier no time

should be lost before doing this work. Seeds sown now and grown on without a check all summer make neat plants to flower next winter, but sowing in September is preferable. Where old plants can be carried over safely through the summer, if they do well they are better than young ones, as a greater number of flowers are obtained to a plant. Seeds of herbaceous plants sown now will come up well, and, if transplanted before they become crowded in the seed-boxes, will make strong plants to set out in spring. Most of them will flower next summer, although some will not do so until the second year, no matter when they are sown, while seeds of Iris, Pæonies, Hellebores, Dictamnus and others take at least three years before flowering size is reached, and, indeed, if these are not sown as soon as gathered they often remain dormant a year before germinating, so they should always be sown as soon as ripe, when this is practicable.

We commence propagating Carnations about the tenth of January, this being a good time to root them, and the weaker growing sorts, such as Lizzie McGowan and Grace Wilder, are secured first. There is a tendency in the flowers of this latter kind to come streaky in color, and this may be avoided to a great extent by taking all cuttings from the plants that do not show this tendency. Daybreak is now recognized as a standard kind, but to secure well-shaped plants at lifting time, cuttings should be taken as late as possible, and as Daybreak roots more easily than any kind I know, it is possible to take cuttings as late as May and to have fine plants at lifting time. Carnation cuttings do not like sunshine or drought; plenty of water, shade and gentle bottom-heat will secure success.

Among greenhouse plants, Ericas, Boronias, Dipladenias, *Luculia gratissima* and Rubber-plants can now be propagated with more success than at any time; when *Ficus* cuttings are made we place the cut ends in dry sand to heal over for a few hours before putting them in the cutting-bench, and when the cut is thus healed very few fail to root. *Bouvardias* are best increased by root-cuttings at this time, and it is also preferable to raise new plants each year, as these give better flowers, though, perhaps, fewer in number. *Peperomias* make ideal plants for house-decoration, and a few leaves taken now and rooted in the same way that *Begonia Rex* is treated, will soon form useful material for use later on.

If seedlings of Ferns are coming up in various places in the greenhouses they should be carefully lifted and pricked off in pans, to be potted later; these make nice plants for jardinières during the summer or to grow on. *Adiantums* do not come so spontaneously as many others do, and to secure a quantity of these a sowing of spores at this time will give a good supply. Old plants, divided into small pieces and started in the propagating-bench, will also make good plants, but they are never as shapely as seedlings are. The colored-leaved *Dracænas*, when used for furnishing the house, soon lose their bottom leaves and become unsightly. If the tops are very highly colored, after making cuttings of them, they will root far better if placed in bottles of water than in sand, a little charcoal being added to keep the water sweet. The cuttings should be potted as soon as roots form, which will require about a month if the bottles are stood in a warm place. The stems may be cut in lengths of two inches, to be placed in a flat and covered with chopped sphagnum moss and sand. If the flat is placed on the hot-water pipes to get a good bottom-heat, every piece will grow, and these make the best plants, although they require a longer time than the tops. The tops are earlier in showing color.

South Lancaster, Mass.

E. O. Orpel.

Correspondence.

Oil of Basswood.

To the Editor of GARDEN AND FOREST:

Sir,—I note with interest in the Consular Reports for December, 1893, an account from Mr. Johnson, United States Consul at Stuttgart, of the attempts made in Germany to produce a substitute for olive-oil, and a question is suggested to me by this report which you may be able to answer. Mr. Johnson says that the south Germans have made a table oil from the beech-nut which has "given great satisfaction," but the supply is too precarious on account of the scarcity of the nut in certain years. More recently a better and more certain substitute has been found in oil made from the seed of Linden-trees. According to the report of Dr. C. Müller to the German Botanical Society, this oil "has a number of excellent qualities, which would appear to make it certain that the Linden-seed will be considered one of the principal sources for obtaining table oil." The regularity with which the Linden produces

seed precludes any fear of scarcity; and the percentage of oil in Linden-seed is given as fifty eight. It is maintained, Consul Johnson says, that "the oil has a peculiarly fine flavor, free from all bitter or aromatic taste, and that it has the appearance of olive-oil. It belongs also to the oils which do not evaporate. Oil made from Linden-seed will never become rancid. It has no tendency to oxygenate. It will stand a great degree of cold without freezing. Dr. Müller has exposed it to a temperature of three degrees, Fahrenheit, below zero without being able to notice any change."

Do you suppose that the seeds of our native Lindens (*Basswood*) would yield such a percentage of so excellent an oil? From an economic point of view, the question must be very well worth considering.

Boston, Mass.

J. E. C.

[The seeds of all the Lindens undoubtedly contain oil in larger or smaller quantities, but what percentage can be obtained from the American species can only be ascertained, of course, by careful experiments. The subject is, an interesting one, and well worth the attention of our agricultural chemists.—Ed.]

Timber Cutting on State Lands.

To the Editor of GARDEN AND FOREST:

Sir,—It may be of interest to your readers to learn something of the work done in Minnesota recently, looking into the returns of timber-cutting on lands belonging to the state and to state institutions. The investigations are being conducted by a joint committee of the Senate and the House of Representatives in a very efficient manner.

Many of the returns are found to cover but a fraction of the timber cut, and the state seems to have been defrauded extensively. One of the ways in which this has been done is as follows: A buys pine-stumpage at auction from the state; he agrees to pay a certain price and to put a certain mark on the logs, and these logs are to be sealed by the Surveyor-General of Logs and Lumber. The Surveyor-General's deputy comes to the landing when these logs are piled on the bank of the stream, and scales those that have the state mark on them, but does not make sure that these are all the logs that were taken from the section the state has sold. This gives the lumberman abundant opportunity to haul logs from the same section to some other landing and to put some other mark on them, which many of our enterprising and liberty-loving loggers are not slow to do. On one of the sections cut in this way it was found that over 7,000,000 feet had been cut from it, while the Surveyor-General's deputy, virtually accepting the lumberman's report of his own work, returned but 600,000 feet. Besides this, a very large amount of cutting is done without any form of permit, the timber thus stolen being principally from Sections 16 and 36, which in each township are set aside by the state as an endowment for her public schools. It is said that during the past two years the state has not received reports of one-half the amount of log-timber cut on its lands.

St. Paul, Minn.

X.

Grafting Grapes.

To the Editor of GARDEN AND FOREST:

Sir,—I have an acre of unreclaimed swamp on my farm, around the borders of which are growing twenty or thirty strong wild Grape-vines, which clamber over trees and bushes and bear every year large crops of white and purple grapes, generally of large size, but with very thick skins and of coarse quality. Would it be profitable for me to graft these vines with grapes of better sorts, and if so, how shall I proceed?

Hamburg, N. J.

Quis.

[No doubt, it would be a good thing if the thrifty vines about this swamp were made, by grafting, to produce Niagara, Brighton or Worden grapes, instead of the wild fruit they now yield, but, unless one has considerable experience in this matter, he will be very fortunate if his failures do not outnumber his successes. In some parts of the country this practice is quite general, and entire vineyards, planted with unprofitable varieties, have been grafted with desirable ones. At the same time, many other persons who have carefully copied the processes as described have signally failed. We are not aware that the French method of using both stock and cion in a somewhat herbaceous condition has been tried to any great extent in this country.

This kind of grafting is done in warm weather, when the vine is making its most active growth, the cions, which contain two buds, being used when they are still flexible, although the centre should be free from pith. The method known as splice-grafting is used, and the cions are set below the fourth bud from the extremity of the shoot.

In this country the most approved practice is to cut the vine low and graft below the surface of the ground. In large vines, like those mentioned by our correspondent, cleft-grafting is generally impossible, because the grain of the stock is so twisted that it will not split true. Side-grafting in various ways is recommended. One of the best is to make an oblique groove on the side of the stump with a fine saw and chisel. The groove should be about a quarter of an inch across, according to the size of the cion, and about as deep as its diameter; a special saw, making a draw-cut about an eighth of an inch wide, instead of a push-cut, is sometimes used for this operation. The cion, which must have two buds, is then shaved off on opposite sides, half-way between the buds, so that it will fit into the groove. When it is placed there one of the buds should be below the level of the ground and the other one above; all the exposed surfaces are then carefully waxed and the stump with the lower bud is covered up with earth, while one bud remains above ground to make growth. Of course, the cion should be dormant, although the stock may be making active growth. If cions are not already taken they may be cut any day during the winter when they are not frozen, and kept in sand until they are needed in spring.—Ed.]

Recent Publications.

The Genera of Taxaceæ and Coniferæ. By Maxwell T. Masters. Reprinted from the *Journal of the Linnæan Society of London*.

Dr. Masters has issued, in pamphlet form, his paper on the "Genera of Taxaceæ and Coniferæ," read December 15th, 1892, before the Linnæan Society of London and published in the thirtieth volume of its journal. This paper, the author tells us, is "the outcome of a comparative examination of the morphological characters of all the genera of Taxaceæ and Coniferæ, so far as I have been able to accomplish it. In most cases living plants have been examined, and in all instances the available museum and herbarium specimens have been studied and the literature relating to them referred to. Constant reference has also been made to the schemes of arrangement proposed by the older writers, and in more recent times by Eichler, Van Tieghem and others. In the main, however, I have followed the lines laid down by Bentham in Bentham & Hooker's *Genera Plantarum*."

Taxaceæ, an order first proposed by Lindley, but reduced by Bentham to tribal rank, is restored, the genera being distributed in two tribes, Salisburineæ, composed of Ginkgo, Cephalotaxus and Torreya, a perfectly natural group; and Taxineæ, divided into two sub-tribes, of which the Yew, *Taxus*, is considered the type of the first. With it are joined the Australian genera, *Ptherosphæra* and *Phyllocladus*, and *Dacrydium*, a genus widely distributed through the Malay peninsula, Borneo, New Zealand, Tasmania, New Caledonia and Chili. *Podocarpus* is made the type of the second sub-tribe, and with it are placed *Stachycarpus* of New Zealand, by Endlicher considered a section of *Podocarpus*, and later by Van Tieghem a distant genus, the view here adopted by Dr. Masters. With *Podocarpus*, too, are grouped *Microcachrys*, "a Tasmanian shrub, with small decussate leaves, which pass gradually at the end of some of the branches into stamens." It is best distinguished from *Podocarpus* by the form of the pollen grains, the aggregated fruits and the woody axis of the flower-spikes. Here, too, is placed *Saxegothæa* of Chili.

The Coniferæ are divided into four tribes, Cupressineæ, Taxodineæ, Araucarineæ and Abietineæ. In Cupressineæ are grouped *Juniperus*, common in the boreal parts of both

hemispheres and extending south to the Mediterranean basin, the islands of the Atlantic, the Himalayas and the West Indies; *Tetraclinis*, with a single species in Morocco, the Gum Sandrac tree; *Callitris* of Australasia; *Actinostrobus* of western Australia; *Widdringtonia* of southern Africa and Madagascar, distinguished from *Callitris* in habit and foliage, by its terete branchlets and opposite leaves; *Fitzroya*, evergreen trees of Chili and Patagonia, and of Tasmania; *Cupressus*, to which Dr. Masters refers the Japanese *Thuyopsis* and *Chamæcyparis*, including the Japanese *Retinosporas*. The two-ranked branchlets of *Chamæcyparis*, however, the fewer seeds, generally two under each scale, and the fact that the cones mature in one instead of in two years, would seem to make it possible to retain generic rank for this group, which would, on the whole, be a rather more convenient arrangement than to merge it with *Cupressus*; *Thuya*, with representatives in eastern and western North America, China and Japan, the Himalaya Mountains and the Orient; and *Libocedrus*, which has a remarkable distribution, the species being natives of China, the mountains of New Guinea, our Pacific states, the Chilean Andes and New Zealand.

In Taxodineæ are placed *Sciadopitys*, with a single endemic Japanese species; *Anthrotaxis* of Tasmania; *Sequoia*, with our two California species; *Glyptostrobus* of southern China, and not to be confounded with the plant usually found in gardens under that name, which is a monstrous form of the *Taxodium* of our southern states; *Cryptomeria*, with a single endemic species in Japan, and *Taxodium*, the Bald Cypress of the south, with possibly a second species in Mexico, unless the Mexican Cypress is considered a mere geographical form.

In Araucarineæ are placed *Cunninghamia*, with a solitary Chinese species for which there is an older name, *Bellis* of Salisbury, which Dr. Masters acknowledges should have precedence, but which, owing to the similarity with *Bellis*, he does not adopt; *Agathis* of Australia, New Zealand, some of the Pacific Islands, Brazil and Chili; and *Araucaria* of Australia, Brazil, Peru and the South Sea Islands.

In Abietineæ the genera are grouped in the following sequence: *Tsuga* and *Picea* in the sub-tribe *Piceæ*; *Cedrus*, *Larix* and *Pseudolarix* in the sub-tribe *Laricæ*; *Kettellaria*, *Abies*, and *Pseudotsuga* in the sub-tribe *Sapineæ*, and *Pinus* in the sub-tribe *Pineæ*.

Dr. Masters is the most careful and experienced student of Conifers. His opportunities for studying these plants in herbaria and in European collections have been exceptionally great, and this paper, the result of years of patient investigation, is a most important contribution to our knowledge of one of the most interesting and valuable, but perplexing, groups of plants.

Notes.

Mr. T. Makino, 3 Yawoicho, Mukogaoka, Tōkyō, offers to furnish sets of correctly named Japanese plants, with localities, date of collection, etc., at twenty cents a specimen, exclusive of postage or express charges.

The new seedling Plum named *Mary* is spoken highly of by the Fruit Committee of the Ohio Horticultural Society. It is a medium-sized plum with yellow flesh, and the tree is an abundant bearer. Last year this fruit sold at wholesale in the Cleveland market for more than twice the price which any other plum commanded.

Professor Massey, in *The Mayflower*, speaks very highly of a variety of *Torenia Fournieri* known as *Compacta*. This plant blooms in the border with the greatest profusion, and seems careless of the weather, whether wet or dry. The flowers are a rich porcelain-blue, shading to dark velvety blue, or almost purple, and, altogether, he regards this as one of the best of blue-flowered bedding-plants.

The so-called pink *Calla*, which is probably a variety of *Richardia Rehmanni*, a species with lanceolate, instead of hastate, leaves, which was introduced into the Cambridge Botanical Gardens in 1888, and of which specimens have since been sent to Kew Gardens, has so far produced flowers which show scarcely any trace of the rose color which characterizes them in Natal. The *Gardeners' Chronicle* says that, although

this *Richardia* has not the attractions of the useful old *R. Althorpiana*, or the new yellow-spathed *R. Elliottiana* and *R. Pontica*, nevertheless the development of the vigorous plants now growing in England will be watched with interest, since they will be worth looking after by hybridizers, and are certain to find many admirers among those who take an interest in what is novel and unorthodox among garden-plants.

Mr. S. D. Willard, of Geneva, New York, stated at the late meeting of the Ohio Horticultural Society that the Harris is the earliest variety of Apricot grown in western New York, and it ripens fruit about the 15th of July. The tree is of dwarf habit; the fruit is large and of good flavor. Harris and Mont Gammet are good varieties for home use, and St. Ambrosia is good for market purposes. Some trees near Geneva have borne five or six bushels in a single season, which have sold for ten dollars a bushel. The market, however, is limited, although the canneries would probably use all the surplus. New York state apricots, when canned and sold on their merits in the Boston market, brought fifty per cent. more than the same fruit from California. The curculio on the Apricot is fought in the same way that it is on the Plum, but it can be conquered more easily. When Plums are grown near Apricots the curculio seems to give its principal attention to the Plums.

A late bulletin of the Hatch Experiment Station of Massachusetts gives a continuation of some experiments to test the influence of electricity on the growth of plants. A bed was prepared and equipped with an apparatus by which an electrical current could be controlled and measured—that is, a given amount could be applied to the soil for a given time. Professor Clarence D. Warner, who made the tests, concludes that some kinds of seeds will germinate more quickly, and certain plants will blossom sooner and ripen fruit earlier when they are subjected to these electrical influences. Plants standing near the electrode developed a larger growth of roots and foliage than those more distant, and vegetables experimented with were not injured by a current of thirty-nine amperes with a voltage of fifty-three, but rather were stimulated in growth. Even if the foregoing inferences are correct, it is admitted that, with our present knowledge, the use of electricity in growing vegetables cannot be considered practical or profitable.

After the leading article of this issue was ready for the press, a remarkable remonstrance against the abandonment of the uniform practice of this city in treating its parks as works of art was presented to the Park Board. This remonstrance is signed by the presidents and many of the executive officers of all the societies in this city which have to do in any way with art, the list including officers of the Municipal Art Association, the Society of American Artists, the National Academy of Design, the Architectural League, the American Institute of Architects, the Art Students' League, the Sculpture Society, the American Fine Arts Society and others. Apart from the interests which they represent, the signers of this protest are individually among the best-known and most highly respected citizens of New York, and the weight of their influence against this departure from the established policy of creating public parks under the direction of trained skill and cultivated taste, ought to induce the majority of the Park Board either to reconsider their plans or to give sufficient reason for their unprecedented action.

The practice of coloring flowers artificially is not unknown in this country. White Carnations, Chrysanthemums and other flowers are tinted by placing their stems in water which contains some dye. Bulbous plants are treated by cutting off the tips of the roots, slicing the bulbs in one or two places, and then allowing the plant to steep in the tincture until the flowers begin to color, when the bulbs are replaced in the pot, covered with some earth, and the flowers are allowed to finish coloring there. Of course, this practice is to be altogether condemned, except in the production of occasional curiosities. Still worse, however, is the artificial coloring of fruit, which, as we learn from the *Revue Horticole*, is practiced sometimes in France, where, we believe, this ingenious coloring of flowers first originated. It seems that when plums are too green they are coated with acetate of copper or sulphate of copper; that lemons when too pale are tinted up with citrine, the green spots being imitated with "diamond green," whatever that may be. Strawberries are colored also by sprinkling them with some chemical, and peaches are delicately tinted with a mixture applied with a brush through a zinc stencil-plate pierced with holes. In melons a tube is introduced through which atropine, with a little essence of melon, is put into the centre, and new varieties of apples and pears are contrived by using aniline dyes. We hope that it will be a long

time before our fruit-dealers become experts in these devices to make bad fruit salable.

The Experiment Station of California is sending out to the farmers and gardeners of that state many seeds and plants for testing. All who desire these seeds or plants make an application, and are required to contribute a small amount to ensure a personal interest in what they receive, and they assume an obligation to report the results of their experience. Among the plants now offered for distribution are some varieties of table Grapes from Persia, which have been praised by all travelers. The vines belong to the species *Vitis vinifera*, but the fruit has quite a distinctive character when compared with the varieties grown in the west of Europe. The varieties which have already fruited at the station ripen early, about with the Sweetwater, and as they have a much firmer flesh and tougher skin than that variety, they may prove very valuable for early shipping. The berries are long, oval in form, of large size and good quality. Ten varieties are named, some of which are bright red, others light yellow, others green and others black. More than forty species of Italian Wine Grapes, received through the kindness of Count G. di Rovasenda, of Turin, are also offered. The principal value of these Grapes for cultivation in California, where the climate is very similar to that of Italy, is the remarkably high acidity of the fruit, together with the large proportion of sugar. The fruit is astringent, and yields wines which are in large demand for home use and export on account of their good keeping qualities, deep color, agreeable acidity and vinous flavor. Their astringency is reduced with age, and they become delicate first-class wines. The trees in the nursery of the discontinued Board of Forest Commissioners are also offered to the people of the state for planting on public grounds surrounding state and county buildings, city and village parks and school-grounds. In the bulletin which announces these offerings for distribution the English Oak is said to have proved very satisfactory as a rapid-growing hard-wood and shade tree in the coast region of California, but as it is rather difficult to transplant, the station offers to send acorns to all those who desire to start trees where they are sure of a permanent place.

Lemons have been remarkably scarce in this city during the past two months; the few cargoes which arrived in December were quickly distributed here and in western cities, and New York dealers have at times been compelled to draw on Boston for supplies. In November, when the Sicily fruit is due here, there were no imports of lemons, against 120,000 boxes received the year before during that month. The lemon season was unusually backward, and the very low prices obtained last year, together with the alarm on account of cholera, discouraged shipments; importations have been further delayed by unfavorable voyages of the Mediterranean fruit steamers. On Monday of this week a consignment of 17,000 boxes of Messina, Palermo and Catania lemons was sold at auction at high prices. Well-known brands brought from \$4.25 to \$5.00 a box, while in January, 1893, "fancy" lemons sold at from \$2.25 to \$2.75, and those of fair quality realized but \$1.75 a box. The sale began with high-grade Messina fruit, but so bare was the market that prices advanced as the sale progressed, and toward the close, Catantias, the lowest grade of lemons, sold for as much as the best Sicily fruit. These high prices were forced by large orders from the west, and in an hour and twenty minutes, lemons to the value of \$70,000 were sold. An average supply is expected during this month, so that lower prices are likely to follow soon. Along with the lemons were sold 2,200 boxes of Sicily oranges, at \$1.80 to \$2.10 a box. This fruit, while inferior in flavor to that from Florida, is in demand for its superior keeping qualities, and is therefore preferred by small dealers. The same general conditions apply to foreign oranges as to lemons, and but 1,700 boxes came into this port during last month, whereas 72,000 boxes were received in December, 1892. The orange crop in Florida is larger than ever before, and 406,600 boxes of this fruit had been received in New York alone by local dealers at the close of December. Since 1884, when only 600,000 boxes of oranges were shipped from Florida, the trade has steadily increased, and it is estimated that shipments this year will reach 4,500,000 boxes. Prices for Florida oranges at this time range from \$1.25 to \$2.40 a box. Pineapples may be had throughout the entire year, and various grades are now in abundant supply. Choice fruit from Havana can be bought as low as twenty-five cents at retail. Selected Florida pineapples bring as much as seventy-five cents each, while a small supply from the Azores last week sold for a dollar to a dollar and a half apiece. These were considered equal to the best pineapples ever seen here, both in quality and appearance.

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Street Trees.

LAST September Mr. L. Collins, Secretary of the Tree-planting and Fountain Society of Brooklyn, wrote a circular letter to several nurserymen and other experts, asking them to name what they considered the best trees of different sizes to use as shade-trees in the streets of Brooklyn, and the answers which this letter called forth have recently been published in the newspapers of that city.

The trees recommended are, for the most part, suitable for the purpose, although it is curious that only one writer recommends the Ailanthus, which is probably the best street tree that has ever been used in northern cities, in spite of the prejudice which exists against it, and which, as is explained in the letters alluded to, can be overcome by planting only pistillate trees. Some of the trees recommended, however, are hardly suitable for street-planting. One writer recommends the European Ash, which is notoriously a short-lived and unhealthy tree here, like the European Sycamore Maple, which is also recommended. The American Chestnut is recommended, but, in common with other nut trees, it has the disadvantage of being too attractive to boys, who climb into the branches or mutilate the trees with sticks and stones in their pursuit of the nuts. Nor should we consider the Ash-leaved Maple, although a rapid-growing tree, a desirable inhabitant of our streets; it branches too low, and the branches are too brittle to make it desirable in such situations. Nor is the Canoe Birch, which is recommended a good street tree, as all the Birches need their lower branches to balance the narrow pyramidal heads, and street trees, of course, cannot be allowed to branch low. *Catalpa speciosa* is also recommended, but, although a hardy and fast-growing tree, it has the disadvantage of producing such showy flowers that the trees in public places rarely escape mutilation. Nor do we agree with the assertion of one of the writers that "for village streets or country roadsides there is nothing finer than the European Beech." A Beech to be really beautiful must rise in a solid dome of foliage from the grass, and specimens from which the lower branches have been removed

are not attractive. One writer recommends the Lombardy Poplar and the variety of the Silver Poplar, known as *Populus Bolleana*, both fastigate trees of rapid growth, but, unfortunately, now practically worthless in this country, owing to the attacks of borers, which riddle the trunks. The Mountain Ash, too, is recommended, but the beauty of the too attractive fruit would prove a serious objection to this tree. The Yellow Wood, or *Cladrastis*, is suggested; it is one of the most charming of our native trees, but hardly suitable for a street tree, as it usually branches low, and has one serious drawback in its brittle branches which are often broken by gales. Nor should we have thought of *Magnolia conspicua*, or *Cornus florida*, as desirable street trees, for both produce such showy flowers that it would be impossible to save them from mutilation.

Several of the writers recommend the weeping cut-leaved European Birch, but to this there is the same objection as there is to the Canoe Birch; these trees are beautiful when they grow from the ground as pyramids; they become unsightly and unattractive as soon as the lower branches are removed. The Locust, *Robinia Pseudacacia*, is suggested, but, like the Lombardy Poplar, it is unavailable through the injuries inflicted on it by borers. Most of the writers agree in recommending the Tulip-tree, the Red Oak, the Sugar Maple, the Norway Maple, the Pin Oak—all excellent trees, and, on the whole, perhaps the best large-sized trees available for our streets. The Oriental Plane, which promises to be a valuable tree here, and to surpass in utility the American species, which serious fungal diseases disfigure, is recommended. The Three-thorned Acacia, or *Gleditschia*, and the Kentucky Coffee-tree are both recommended, and both are tough and handsome trees, which have the advantage of leafing out late in the spring, and thus allowing the sun to reach the ground beneath them at a season when it is agreeable.

The selection of trees of the right kind is necessary if a plantation, whether it be in a street or elsewhere, is to be permanently successful, but, after all, a wise selection of material is not the only thing that is needed. It is equally important that an abundant supply of proper soil should be furnished to each tree, that the trees should be carefully grown in nurseries, frequently transplanted and properly pruned until they attain a proper height for permanent planting. They should be carefully staked as soon as planted and protected against the teeth of horses by some efficient trunk-guard. If street trees are planted as they are in Paris—in such a way that it is possible to supply them freely with water in periods of drought—the success of the plantations will be greater and the life of the trees prolonged. In a city of the size of Brooklyn tree-planting can only be properly and economically carried out with the assistance of a municipal nursery, in which trees are specially grown and prepared for the purpose. This plan has been successfully adopted in Paris and in Washington, which pass for the two best-planted cities in the world, and should always prevail where planting on a large scale is to be undertaken.

WHEN the earlier bulletins of the Tenth Census called attention to the fact that the supply of white pine in the country was rapidly diminishing, the statements were at first denied with a good deal of energy. Since that time, however, the scarcity of good pine has become evident, and of late years other woods have been employed more and more in place of this lumber. An article in a recent number of the *Northwestern Lumberman* on "Lumber for House-finishing," begins with the assertion that as a material for doors, windows and interior trimming of the medium and cheaper class of houses the use of white pine will henceforth constantly diminish. This is not because this wood is less esteemed, but because the supply is becoming more and more inadequate to the requirements. If good white pine were now, as in the past, the main dependence for finishing-wood, there would not be nearly enough to meet the demand. As long as any

white pine remains it will be used to the extent of its available supply, but the average size of standing Pine is diminishing, and that means that the percentage of good lumber is depreciating. In other words, the gross supply is not only getting smaller as years pass, but the time is at hand when the amount of finishing-stock which can be obtained from a given quantity of logs will be exceedingly small.

Since large supplies of timber must be carried for general house-finishing, it will not do to depend on woods with a scattered and limited supply. Cherry, birch, sycamore and butternut can all be employed to a certain extent, but they cannot be depended upon for general factory work because of the difficulty of accumulating any quantity of such lumber. Besides this, the factory lumber for general use must comprise a large portion of wood which is soft enough to be easily worked, and although the tendency is to use hard woods in the better class of houses, and altogether in structures of the highest class, nevertheless, in the majority of dwellings for the people, and in cheaper kinds of business-buildings, woods which are easily worked must be used, and the material must be readily obtained and furnished to the market in large quantity. To the question which is thus forced upon builders, as to what will be the main dependence for sash, doors and interior trimming, *The Lumberman* answers that experience has already proved that oak will lead among the deciduous woods, because it is most abundant and widely prevalent, adaptable and cheap. It is the only wood of which no one complains, and fortunately the supply is still abundant, and it can be had at a much lower price than good pine. If it were not for the cost of working, oak would be the cheapest good finishing-wood for a house, but the contractors who wish to hurry buildings and slight their work under strong competition, do not like to work oak because it must be handled with more care than softer woods. Nevertheless, it will continue to lead as a finishing-wood when substantial work is required. Yellow pine is now largely used for finishing in the place of northern pine. It is abundant and cheap; the mills and factories take kindly to it, and it is susceptible of finish in natural color or to receive paint. Treated with shellac and oil, it is almost as hard as oak. It is taking the place of white pine as a general factory wood. and, with oak, it will be the principal wood for years to come for house-finishing. Freight rates are too high to bring the fir, spruce, cedar and red-wood of the Pacific coast in competition with yellow pine. But southern cypress will probably be used more and more. It is light, it runs wide, transports at a reasonable cost, has much of the workable quality of white pine, can be finished with little waste, and is a handsome wood. Ash, poplar, gum, maple and other woods may be utilized for special purposes, but it remains true that the three woods which will be used for finishing houses as the white pine becomes more scarce are oak, yellow pine and cypress.

Boston's New Metropolitan Parks.

WHEN the report of the Boston Metropolitan Park Commission was outlined in these columns less than a year ago, it seemed like an ideal project; so comprehensive, so well considered, and so far-seeing as to be, like most ideals, beyond prospect of any speedy attainment. Yet some of its most important features have been already realized, and others are assured. Public sentiment in relation to park improvements appears to have developed here to a most enlightened degree in the past few years. It was only in 1891, that the first suggestion was made for a system of parks adequate to meet the needs of the great cluster of cities and towns that, with the city of Boston, forms practically one metropolitan community. The next year, the preliminary Metropolitan Park Commission was appointed. The suggestions made in its important report last winter were embodied in the

form of law, and to carry out its objects the sum of one million dollars was placed at the disposal of the permanent commission appointed for the purpose.

This commission has been actively at work since its organization. Mr. Charles Eliot, who was the landscape-architect to the preliminary commission, having become associated with the Olmsted, in the new firm of Olmsted, Olmsted & Eliot, that house was appointed to hold the same relation to the permanent commission. The plans involved work of the most interesting and attractive kind for the landscape-architect, and Mr. Frederick Law Olmsted has pronounced the various features of the scheme as presenting the finest opportunity that has come before him of dealing with lands specially fitted by nature for public recreative uses.

The first reservation that has been made by the commission is a minor one in respect to area, but of great importance as to its natural features. This is the tract containing the famous group of ancient Oaks, latterly known as the "Waverley Oaks," but more properly designated as "the Beaver Brook Oaks," situated near Waverley station on the line of the Fitchburg and the Central Massachusetts division of the Boston & Maine Railroads. This place was described and the Oaks figured in *GARDEN AND FOREST* (volume iii., page 85). (See also the articles in volume v., pp. 371, 386.) The reservation taken by the commission makes a charming recreation-ground of fifty-eight and a half acres, situated in the city of Waltham and the town of Belmont. It includes not only the lovely pastoral tract occupied by the noble old Oaks, the finest trees of the kind in New England, but also the beautiful Beaver Brook cascade sung by Lowell, and the two small ponds above. Altogether, the Beaver Brook Reservation, as it is called, is one of the most delightful spots in the Boston neighborhood. Mr. Edwin F. Atkins and Mrs. Elisha Atkins, of Belmont, generously gave \$12,500 toward the expense of the taking, the contribution of the former amounting to \$10,000.

For its second taking the commission has had the most extensive feature of its scheme. The beautiful mountain-like range of the Blue Hills, whose reservation as a "Massachusetts Forest" was urged in an article in *GARDEN AND FOREST* (vol. iv., p. 362), is now a public domain for almost its entire length, from its high western summit to its eastern foot-hills. This reservation, with a length of about five miles and an area of 4,000 acres, is the largest single park-space possessed by any American city. It is only to be compared with the broad forest-domains in the neighborhood of the great European capitals, and in many respects is superior to London's famous Epping Forest.

Like the Lynn Woods, the Blue Hills revert to public ownership after a lapse of nearly two centuries. In 1711 the town of Boston sold its "Blue Hill lands" in Braintree, 3,000 acres in extent, to four persons for a few thousand dollars. The cost of the present taking will probably be at least \$200,000, but the public advantage will make that a cheap price. The lands are almost as wild to-day as they were when Boston sold them.

This great reservation will include eleven prominent summits, wild and rocky, but gently undulating for the most part, and forming many enchanting prospects from the city, the bay and the surrounding country. The greatest elevation, the Great Blue Hill, has a height of 635 feet above sea-level, and being seen from near the level of the sea it has the aspect and dignity of a goodly mountain. It is the highest land near the sea on the entire Atlantic and Gulf coast, from the Piscataqua, where Agamenticus rises in southern Maine, to the Rio Grande. The prospect is a glorious one, commanding a wide stretch of the coast and a vast expanse of Boston and Massachusetts Bays; clusters of cities, towns and villages containing a third of the population of Massachusetts; broad inland views, from Mount Wachusett to more than a dozen prominent peaks in southern New Hampshire; and, southerly, a sylvan expanse that seems almost as unbroken a woodland wilder-

ness as when the land was first trod by white men, so thoroughly do the trees veil the habitations and clearings of man. Here the surfaces of several beautiful lakes glisten in the sunlight. One of these, Hoosicwhisic Pond, is directly at the southern base of the range, and is included in the reservation. Two other larger ones, Ponkapoag and Massapoag, are not far away.

The reservation lies in the towns of Milton and Canton, and the city of Quincy. It is within eleven miles of the state-house in Boston, and three miles of the city boundary. The Blue Hills have a great historic interest in the fact that they gave the name to the state of Massachusetts, which, meaning "the place of the great hills," was told to Captain John Smith by the Indians when he explored the coast of New England in 1614. He therefore called the Blue Hills "Massachusetts Mount" on his map. When this map was shown to Prince Charles, the royal boy changed the name to Chevyot Hills. But the more common-place name of "Blue Hills" obtained. The name of "Massachusetts Mount" should at least be restored to the Great Blue.

The metropolitan commission has in contemplation the taking of the Middlesex Fells region to the northward of Boston, and a beautiful tract of wild wood-land in the West Roxbury district of Boston and the town of Hyde Park, including the highest elevation in the city limits, known as Bellevue hill, and a tarn locally known by the unattractive name of Moddy Pond. The city of Boston proposes to build a fine parkway connecting the Arnold Arboretum with this spot, and the highway known as Blue Hill Avenue is to be changed into a boulevard from Franklin Park southward.

Together with the Lynn Woods, these three features of the Boston Metropolitan park system will have a total area of something near 10,000 acres. The taking of the shore-front of Revere Beach, with a length of something like two miles of curving sands, and within twenty minutes of the business centre of Boston, is also in contemplation for the near future.

Sylvester Baxler.

Botanical Notes from Texas.—XV.

BEEVILLE is a little town about one hundred miles south of San Antonio and fifty miles from the Gulf of Mexico. The soil in this vicinity is generally sandy, and there are some rocky points along the arroya, which extends through the town. A few interesting and rare plants grow in Bee County.

Liatris elegans, found in the more eastern Gulf states, has immigrated to south-western Texas, and is becoming well distributed. This variety is by far the handsomest of our species of *Liatris*, and is worthy of a place in any garden. The large involucre of the flower-clusters are petaloid, and they are here colored blue, or rarely rose-colored. The flowers themselves, so far as seen, are whitish. The strict stalks are floriferous almost their entire length of two to three feet. The short rigid leaves are usually reflexed. I have not seen the species elsewhere in the state.

Pterocaulon virgatum, a strict-growing and singular-looking composite, abounds in southern Texas in sandy sterile places from Bee County eastward to Harris County, as a recent trip over the intervening country has shown. The species may readily be recognized by its narrowly oblong, sharply pointed leaves, which are whitened on the under face, and by its alate stems, which gave the plant its generic name, Winged-stem. The yellowish flowers are disposed in remote, spike-like clusters.

I met at Beeville, for the first time, the beautiful little *Polygala Lindheimeri*. It is a slight species, growing here from six to ten inches tall. It has purple flowers and oblong truncated fruit. It is well suited for living in a dry country, having a deep-growing woody root of a red color. The species is rare.

Galactia marginalis, like its congener, *G. heterophylla*, has deviated from the generally trifoliate form of leaves which the genus possesses, but in a different direction, it having suppressed two of its leaflets, and become unifoliate. The leaflets are an inch or two long and lanceolate in form. On its lower face the leaflet is circumscribed by a strong nerve, a peculiarity which led Bentham to give the plant its specific name. It is enabled to live through times of drought and of hard fare gen-

erally, having a deeply planted oblong tuber. Its flowers, which are large for the genus, are dark purple in color.

Cassia procumbens, a diminutive prostrate plant, grows about Beeville. The species is not common in Texas. Its yellow flowers are large, and the leaflets of this species, like those of many of its congeners, are sensitive, closing at the slightest touch. *C. chamæcrista* is the commonest *Cassia* in the state, and covers fields of unoccupied land everywhere. Its leaves also are very sensitive.

The city of Leyden, in Holland, built a monument to the memory of Boerhaave, their great botanist and physician. His pupil and protégé, Linnæus, dedicated to his preceptor and patron a more lasting monument, in the genus *Boerhaavia*, of which there are at least two Texas species, *B. erecta* and *B. viscosa*. *B. erecta* is common in Texas and eastward and westward of this state. Its stems are ascending or erect, bearing on their lower portion numerous fleshy ovate leaves, green above and whitened below, and becoming above nearly naked, spreading panicles of light purple flowers, succeeded by slender club-shaped fruits. *B. viscosa* is prostrate unless it is helped to rise by other plants. It is a strong and vigorous plant. On the sands of the coast it sometimes throws out prone branches four to six feet long. Its habit is very like that of *B. erecta*, except in its general viscidness and its small dense heads of dark purple flowers.

Indigofera leptosepala is one of the handsomest pea-flowering plants in Texas. This species is abundant over most of Texas, and eastward through the other Gulf states, and northward through the Indian territory to Kansas, through the southern tier of counties from near the ninety-eighth meridian westward. It is a prostrate species and readily recognizable by its small scarlet flowers. *Crusea allococca*, formerly called a *Diodia*, a southern species, is often to be seen in this vicinity, forming small masses of vegetation in open fields and along railways. The handsome bright yellow flowers of *Xanthisma Texana* adorn the prairies of central Texas from the Gulf to Red River. It extends northward through the Indian territory. This composite is abundant near Beeville. *Tephrosia Lindheimeri*, a conspicuous and handsome Pea, with prostrate stems, obovate hoary leaves, and large purple flowers borne in erect racemes, can hardly be mistaken for any other plant. It grows abundantly throughout central Texas. Our silver-leaved Sunflower, *Helianthus argophyllus*, grows rarely in Bee County. It is very abundant near the gulf at Aransas Pass, where it is taking possession of all abandoned fields. The disk flowers of this species are purplish. What appears to be a *Calliandea*, though out of its reported range, is sometimes met with near Beeville. I have seen it only in fruit.

Kansas City, Kansas.

E. N. Plank.

The Red Mulberry-tree.

THE genus *Morus*, to which this tree belongs, is not a large one. One species inhabits the eastern United States; another, finding its most northern home in south-western Texas, is common on the Mexican table-lands; and a third has been found on the mountains of New Granada. In the Old World *Morus nigra*, now a well-known fruit-tree, cultivated in all temperate countries of the world, is supposed to be a native of Persia; the home of *Morus alba* is in northern China and on the island of Yezo; and on the high mountains of the islands of the Indian Archipelago are two or three other Mulberries, which botanists have sometimes considered species. Of them all, the most important and interesting is *Morus alba*, as upon its leaves the silk-worm finds its most palatable and productive food. For a period of time that cannot be even guessed at this tree has been cultivated in China; long before the Christian era it was carried into India, and in the twelfth century was introduced into Europe, where its cultivation rapidly spread, especially in France and Italy. No other tree, perhaps, gives employment, directly or indirectly, to so many members of the human race. Few other trees produce a product of greater value; and certainly no other has been the subject of such voluminous and exhaustive literature. As might have been expected in the case of a plant which has been carefully cultivated for centuries under widely different conditions of climate and soil, the White Mulberry has produced many varieties now recognized as races, and valued for special characteristics.

The fruit of *Morus*, which is the aggregation of several nut-like individual fruits, each enclosed in the thick, fleshy, succulent calyx of the flower, has a pleasant acidulous flavor, and in some countries is much esteemed, the trees being grown specially for the fruit.

Our American Red Mulberry, the *Morus rubra* of botanists, although the color of the fruit to which it owes its name is rather dark purple, or almost black, rather than red, is a broad-branched, round and dense-headed tree, which sometimes, under exceptionally favorable conditions, grows to a height of sixty feet and produces stout trunks three or four feet in diameter. Trunks of even more noble dimensions may occasionally be met with, and on the estate of Mr. P. J. Berckmans, President of the American Pomological Society, in Augusta, Georgia, there was, a few years ago, a noble specimen with a trunk which girted nearly twenty feet at three feet above the surface of the ground.

The leaves of the Red Mulberry are of ample size, ovate, pointed, heart-shaped at the base, and, like those of other Mulberry-trees, often deeply lobed on vigorous young shoots; they are of the darkest and richest green, rough to the touch on the upper surface and coated on the lower more or less thickly with pale hairs. The flowers, like those of other Mulberry-trees, are insignificant in appearance, and are borne in unisexual, catkin-like, axillary clusters, the two sexes being produced sometimes on the same individual, and sometimes on separate individuals, the male flowers in short loose racemes and the females in dense heads. The flowers have no corolla, and consist of a minute four-parted green calyx, and either of four stamens or of a simple pistil. The fruit, which resembles a small blackberry, ripens in June and July.

The Red Mulberry is widely scattered over the territory of the United States; from western New England and Long Island it ranges west through southern Ontario to the Black Hills of North Dakota, and southward to Cape Romano and the shores of Bay Biscayne, in Florida, and to the valley of the Colorado River, in Texas. It is a tree that loves deep, rich, well-watered soil, and is usually found on the alluvial bottom-lands of streams, where it is often very abundant, especially in the region west of the Alleghany Mountains, where it grows to its largest size.

The bright orange-colored wood of the Red Mulberry is not without value, although it is soft, coarse-grained and not particularly strong; it is tough, however, and few of our woods more successfully resist decay when placed in contact with the soil. It is much used, therefore, in fencing; it is considered valuable by coopers, and in some parts of the southern states is employed in boat-building.

As a fruit-tree the Red Mulberry is not to be despised, as travelers who have had the good fortune to pass a summer nooning, well shaded from the heat of the sun, among its branches can gratefully testify. No attention has been paid to improving the fruit by selection or cultivation, as mulberries are not greatly esteemed in this country, where other fruits are plenty. There seems no reason, however, why it could not be made to equal the best European varieties in size and quality.

In ornamental planting, the Red Mulberry is valuable in some situations as a specimen, as may be seen in the illustration, on page 25, of a tree on the grounds of the Alabama Agricultural Experiment Station. This tree, which is about thirty feet in height, with a trunk circumference of more than ten feet, stands in what was a gullied "old field" when the college acquired the land some fifteen years ago. Under systematic cultivation the soil has rapidly regained its former fertility, and the tree has taken on new growth and vigor, which is seen in its rapidly increasing size and symmetry. This regularity in the outline of its head, and the denseness and the dark color of the leaves, are distinguishing marks of our Mulberry, and they are features which do not lend themselves readily to landscape-composition in which other trees of more open habit and lighter foliage predominate.

Like all the Mulberries, the American species is easily raised from seed and easily transplanted, although young seedlings are rather tender, and during their early years are the better for a little winter protection, especially in regions of more severe climate than those in which the tree grows naturally.

Plant Notes.

Hybrid Nymphæas.

GROWERS of Water-lilies in this country have for some years been familiar with the beautiful yellow-flowered Nymphæa called *Chromatella* and the later hybrids which have been produced by Monsieur Latour-Marliac, of Temple-sur-Lot, France. A late number of the *London Garden* contains a colored plate of *N. Marliacea carnea*, which represents a flower seven inches across, five inches high and colored creamy white, tinged with red at the base of the petals, while the stamens are a rich orange. Accompanying this is a letter from Monsieur Marliac, the greater portion of which we herewith quote, for we are sure our readers will be glad to get accurate information as to the parentage of these hybrids, together with some idea of the systematic and intelligent way in which this most successful producer of new Water-lilies is still devoting himself to the production of novel forms and colors in these beautiful plants.

About the year 1879 I commenced the work in earnest by crossing the finest types of hardy and tropical Nymphæas which I had in cultivation. These early attempts were at first negative in their results, but soon afterward I scored an unexpected success in a hybrid with deep red flowers, the seed parent of which was Nymphæa pygmæa alba, fertilized with pollen from the flowers of *N. rubra Indica*. Unfortunately, and to my great disappointment, this magnificent specimen proved hopelessly barren, and from it I obtained neither seeds nor offsets, so that, after having tried in vain to reproduce it, I gave up the task and turned my attention in another direction.

In order to obtain plants of a really ornamental character, it seemed especially necessary not to employ as seed parents any subjects except such as were very free-flowering, and by rigorously adhering to this principle I succeeded, little by little, by means of numerous sowings and strict selections, in raising types which were in every way improved in the form and other characteristics of their flowers. It was thus that one of these new subjects, *N. alba*, fertilized with pollen from the American species, *N. flava*, produced *N. Marliacea Chromatella*, which has achieved such a high reputation. In the following year I obtained the hybrid, *N. odorata sulphurea*, from a similar crossing of *N. odorata alba* with *N. flava*, and the last-named species has also been the pollen parent of *N. pygmæa Helvola*.

About the same time two species of high character made their appearance in gardens, namely, *N. sphærocarpa*, a native of Sweden, and the elegant *N. odorata rubra*, found at Cape Cod, in North America. The sparse-flowering character of *N. sphærocarpa* (a diminutive possible sire by the side of my first-raised hybrid) determined me to reject it for hybridizing purposes, and I gave all my attention to the fascinating American variety, *N. odorata rubra*, which, employed as the pollen parent, with my choicest specimen of *N. alba* as seed parent, rewarded me with the sweet *N. Marliacea rosea* and *N. Marliacea carnea*. *N. odorata rubra* was subsequently the parent of the beautiful *N. odorata exquisita*, the color of which is pink, approaching to carmine. As the last-raised specimen of this first group of my hardy hybrid Nymphæas, I must mention the remarkable *N. Marliacea albidia*, the flowers of which have not yet been surpassed in size by those of any other Nymphæa.

In the year 1889 the Universal Exhibition was held at Paris, and my small collection of the above-named hybrids timidly took the road to the metropolis, to see if possibly they might attract some notice from amateurs in the midst of the plant-wonders there. Their graceful elegance, however, was appreciated, and they came back with the distinction of a first prize. The success achieved at the Universal Exhibition put fresh life into my ambition, and I applied myself to the work of effecting a cross which would produce plants with flowers of a very bright red color, much superior to the color of *N. sphærocarpa* and *N. odorata rubra*, which I had proved to be

incapable of supplying the desired improvement. After numerous experiments, I at last succeeded in obtaining a hybrid, the flowers of which are of the same color as those of the tropical *N. rubra*, the plant, moreover, possessing the invaluable property of bearing seed—a property all the more precious from the circumstance that it does not yield any offsets.

As I had anticipated, this hybrid could not be sent out, as its seedlings could not be relied upon to resemble it; in fact, it has produced seedlings the flowers of which exhibited a whole scale of intermediate shades of color, from soft pink to the deepest red. Those varieties, however, which it is impossible to render permanent through the failure of their stems to yield offsets, have proved very useful for hybridizing choice varieties of the stoloniferous and proliferous kinds, and it is

introduced to the public, the first of them which flowered being named after the editor of *The Garden*.

The blending of the *Nymphæas* of the *Castalia* tribe, which are found in various northern countries, with the *Lotuses* of the tropics, is now an accomplished fact; but another important task remains in the hybridizing of the *Castalias* with plants of the *Cyanea* section, which includes a great number of superb blue-flowered *Nymphæas*. This is a work which is well calculated to stimulate the enthusiasm of hybridizers.

In conclusion, I have to say that, notwithstanding my very great partiality for the *Nymphæas*, I can appreciate the stately beauty of the *Nelumbiums*, and I have endeavored, by making repeated sowings, to obtain some hardier and more tree-flowering forms of these plants than those of exotic growth. *N.*



Fig. 3.—A Red Mulberry-tree, *Morus rubra*, in Alabama.—See page 23.

from hybrids of this kind that I have obtained the series of those hardy novelties which, during six months of the year, embellish the waters of pleasure-grounds with a never-failing display of their splendid flowers. Most of these new plants are already catalogued under the names of *N. Robinsoni*, *N. Seignoureti*, *N. Laydekeri rosea*, *N. liliacea*, *N. fulgens*, *N. Marliacea ignea*, *N. Marliacea rubra punctata* and *N. Marliacea flammea*. Others less brilliant will soon be added to the list, several of them having been already described.

The acquisition of a red-flowered hybrid *Nymphæa* which yields seed has opened up a new prospect by affording the means of crossing with the yellow-flowered kinds, the result being the production of a legion of *Nymphæas* bearing flowers with singular shades of coloring, such as orange, vermilion and gold. Some of these splendid kinds have been already

Osiris, one of my seedlings, possesses these two important qualities, and I think it is destined to prove a powerful aid and factor in effecting this desirable improvement.

Cultural Department.

Spraying Apple Orchards.

WE have so often urged the advantages of spraying to protect the fruit and foliage of orchards from insects and fungi, and have so often given the details of the best practice, that little remains to be said, and yet thousands of trees in private as well as commercial orchards yield only part of a crop every year because this precaution is

neglected. An interesting bulletin, prepared by Mr. E. G. Lodeman, has just been issued by the Cornell Experiment Station, and it contains the opinions of several practical fruit-growers on this subject. Mr. S. D. Willard, of Geneva, New York, says that "no man engaged in growing apples can afford to dispense with spraying. It should be done, at least, twice in a season and every year, and it will pay a larger percentage on the investment than any other outlay of equal amount." Mr. George T. Powell, of Ghent, New York, writes, after five years' experience in spraying with insecticides and fungicides: "I am satisfied to plan for doing this work in the future more thoroughly than I have ever yet done." Mr. C. E. Chapman corroborates these opinions, and states that his sprayed apples not only "showed less scab, but they were larger and of better color and brought higher prices." We add, in a condensed form, some of the principal points brought out in this bulletin:

APPLE-SCAB.—This is the most serious enemy of the apple-grower. The fungus is active before the leaf-buds open, and the little apples are attacked as soon as the flower is open. It is not known at what season the fungus practically ceases or during what period the apples and leaves are most liable to attacks, nor can it be definitely stated what number of applications are necessary to protect apples from the scab-fungus. As a rule, it may be said that the application should be made at least once before the trees blossom, while two applications are necessary after the falling of the blossoms upon those varieties which are habitually injured by the scab to any serious extent. Upon the most susceptible varieties one or two additional treatments are advisable, while only one or two applications can be made with profit to such sorts as have strong resistant powers to the disease. Such varieties as King, Maiden Blush and Fall Pippins will repay four or, probably, six applications. Red Astrachan can be profitably treated three times, but it is doubtful whether it will pay to make more than one or two applications to the Baldwin or Fallawater.

THE BEST FUNGICIDE.—In making a choice of remedies, cost, ease in preparing and applying, and adhesive power must all be taken into account, and lately another important factor must be considered, which is the readiness with which the various fungicides may be applied in combination with the arsenites against insects. No one surpasses in all these points, but the Bordeaux mixture seems as yet to be the most effective fungicide. The amount required to spray a full-grown tree is about four gallons, and with proper machinery one hundred and twenty-five trees can be sprayed easily in a day. A powerful pump should always be used, as it requires twice as much exertion to apply a given amount of liquid with a small pump than is necessary when one of ample power is used. All the parts which are exposed to the action of the mixtures should be of brass or brass-lined, for iron soon corrodes. The nozzle used at the station is known as the McGowan, and it gives little trouble by clogging. Trees with spreading tops, like the King and Baldwin, should be set at least forty feet apart, in order to furnish sufficient room for the passage of a wagon. The greater ease with which an orchard may be sprayed when in full bearing is of itself a sufficient argument for open planting of Apple-trees. The arsenites are the approved remedies against the codlin-moth, and no preference can be given to Paris-green or London-purple for this purpose, provided they contain an equal amount of arsenic. The first brood of larvæ can be controlled by two applications of either of the arsenites, and it is doubtful whether any financial gain is derived from later applications. It appears that the Bordeaux mixture and the arsenites are equally effective, whether they are applied alone or together, although Paris-green and London-purple, when applied more than once or twice, may do damage to the foliage, unless their caustic action is neutralized. Lime apparently stops this action if a quarter of a pound, first slacked in water, is put in every forty gallons of the poison mixture.

RESULTS OF SPRAYING.—The foliage of a tree, when kept healthy by spraying, persists longer and does better work, and this is seen in the size of the apples. The size of Fall Pippins was practically doubled by keeping the trees and fruit free from fungus. The increased health and vigor of the tree also intensifies the color of certain varieties, and the keeping qualities of the Fall Pippins and Maiden Blush were apparently augmented, and all these improvements were so evident that in the market the price of the sprayed apples over those not sprayed was increased on an average by \$1.00 a barrel by the applications made during the season.

Vegetables in the Greenhouse.

THE slow, laborious and costly method of forcing vegetables by the use of fermented manure in hot-beds is fast giving way to cultivation in greenhouses. This is certainly more economical, saving time and labor, as also the cost of manure, one-half of which is lost in the process of fermentation, to say nothing of cleanliness. Besides, the results of greenhouse cultivation are impossible with ordinary hot-beds, since under the most favorable conditions only one crop can be taken, whereas two can be obtained from the greenhouse between December and May.

I desire here to give an account of the use we made of the Chrysanthemum-house between the 1st of December, 1892, and June of last year. The house is sixty feet long, containing an area of benches equal to that of twenty hot-bed sash. A raised bench was filled with good rich soil to the depth of six inches, and Lettuce-seed was sown on part of the bench, and the remainder was left for successive plantings. This space might have been used in the mean time for other plants, but this would have involved the risk of introducing aphids. The result was that we never had occasion to fumigate or use insecticides during the whole winter, and those who have been troubled with aphids among Lettuce know what an advantage this was. It was decided to try as many as possible of the principal forcing varieties of the different vegetables in order to determine which succeeded best. As a night temperature of more than fifty degrees, Fahrenheit, could not be maintained, Tomatoes, Cucumbers and Melons, which need sixty degrees or more, were not tried. The very small difference between the various strains of Erfurt Cauliflower was surprising, and, except in the purity of the strains, there was none worth noting. Early Danish was two days earlier than any. Henderson's Snowball was the most even grower. Veitch's Early Forcing, Kronck's Perfection and Farquhar's short-stemmed Early Erfurt were very much alike, and all a little uneven. Among Lettuce, Hettinger's Hot-bed Lettuce was by far the best, and, curious to note, unlike most other varieties of the Tennis-ball, it proved of no use whatever for garden-culture. Henderson's Rapid-forcing Radish was the earliest of all, being ready in from eighteen to twenty days from sowing. This variety was closely followed by French Breakfast and Ne Plus Ultra. The white-tipped, forcing, turnip-rooted variety is about four days later, but is crisper and better flavored. Early Egyptian Beet and French forcing Carrot each took three months to mature.

Old Beet-roots forced nicely for beet-greens, and small Rutabaga Turnips, forced, and cut when about one foot high, make a most delicious dish. Under the bench, room was found for a few roots of Rhubarb, and by putting these in from cold storage we had them in succession during the whole winter.

Asparagus forced equally well under the benches, but from some reason, perhaps because the roots were too old, although they forced freely, the shoots were woody and tasteless. From another experience in forcing Asparagus, I found that it is better to place sashes over beds specially prepared for this purpose, and to line the sides below the ground-level and upward to the top of the frames with dry leaves, for the winter, and in early spring with manure. This method makes the conditions more natural. For green onions for salad we found that shallots forced easier than onion sets, and were equally as well flavored. A patch of Water-cress four feet square furnished all the supply we required.

For succession we planted twelve Cauliflowers and a proportionate quantity of Lettuce-plants and other vegetables each week. The same ground was fertilized and used over again as fast as cleared, only in a different rotation.

Wellesley, Mass.

T. D. Hatfield.

Forcing-houses in Dark Climates—Damping Off.

MUCH sunlight is essential to the most successful forcing of fruits and flowers. It is not always best that the sun pour directly upon the plants all day, but the days should be bright and clear. Those portions of the country which are much overcast during winter should be avoided for commercial forcing-business. Our own experience enforces this advice. Ithaca is one of the most cloudy places in the northern states. A bright, clear day in the winter months is unusual, and frequently the sun does not shine an hour continuously for a week and more at a time. Under these conditions plants grow slowly and bear comparatively little; and the greatest care must be exercised in watering and general management to keep the soil sweet, and to avoid the spread of fungi. If I were going into commercial forcing-house work, I should

consult meteorological charts to determine the relative cloudiness of various localities quite as diligently as I should look into market facilities.

I am more and more impressed with the fact that good judgment in watering plants is rare. This is especially true in all such soft plants as Lettuce, Beans, Cucumbers and Muskmelons. If the surface of the soil is constantly wet and hard, the various fungi which cause damping-off will thrive. The common *Botrytis*, which, until recently, was thought incapable of attacking living tissue, will spread rapidly upon the surface of a wet bed, and it will often attack labels in full confidence of victory. In order to avoid the rotting of Lettuce and damping-off of plants, we water only on sunny days, so far as possible, and we then soak the bed thoroughly. When the water is thoroughly settled away, the bed is stirred up on top, so that it will dry out. Constant or frequent wetting of the surface, which is so common among amateurs, is fatal to success in many plants, especially in dark climates. If the air is too dry, wet down the walks; but do not putter with the beds. If, in spite of this precaution and care in ventilating, the Lettuce-rot or damping-off fungi make their appearance, make a liberal sprinkling of sulphur over the bed and stir it lightly into the soil. I am convinced that sub-irrigation, as shown by tests at the experiment stations in Ohio, West Virginia and at this place, is the ideal method of watering greenhouse-beds.

Ithaca, N. Y.

L. H. Bailey.

Ipomœa Leari.

THERE are some flowers of such surpassing beauty that when we behold them for the first time we can only gaze in silence. Such a flower is *Aquilegia cœrulea* and such a one is *Ipomœa Leari*, in my opinion, the most beautiful of its genus or order. I suppose, but do not know, that this is the plant which appears in the fantastic nomenclature of the catalogues as the "Heavenly Blue Moon-flower." If so, it is a matter of some satisfaction to know that so lovely a thing is obtainable at a trifling price. The flowers are about five inches in diameter, and are borne in clusters, three or four being open at once; they last but a few hours, but as the buds on the scapes frequently number more than twenty, and as new scapes are constantly forming during warm weather, the display is kept up for months in undiminished beauty. A few clusters on the breakfast-table are a delightful ornament, and every bud on the stem will open if it be kept in water. Each flower will be of the same cœrulean tint, however small the bud may be when it opens, for the buds will not grow after cutting, but will display their blooms in ever-diminishing size, the last ones so small as to be almost grotesque.

A few summers ago I allowed a plant of this *Ipomœa* to have its own way in the modest affair which I call my greenhouse. It grew with amazing rapidity, thrusting its long, and at first nearly leafless, shoots over the benches and among the pots and along the roof and floor. These shoots developed roots, which struck into the pots and into the earthen floor, and at the same time axillary shoots started at each leaf, which in their turn produced flowers and new growths. All summer I could have gathered hundreds of flowers every morning, but of all the thousands which were not plucked not one produced a seed. When I needed the room in September to stand my pots of bulbs, the labor of cutting away and carrying out so many armfuls of *Ipomœa* growth was so great that I have never since allowed it to stray at will.

As far as my experience goes, it is useless to attempt the culture of *Ipomœa Leari* out-of-doors, for, though it grows vigorously and flowers abundantly when so planted, the blossoms come of a dull coppery purple color, and are not as pretty as the ordinary Morning-glories.

Canton, Mass.

W. E. Endicott.

The Otaheite Orange.—I do not know one other plant for general house-culture equal to this dwarf Orange. I have one which has been in bloom all winter, besides carrying a dozen oranges from a former flowering among its bright glossy leaves. It generally carries a dozen ripe oranges, besides green ones. The fragrance is, of course, delightful. I keep it as a special pet for my study. Liking some sunshine, it nevertheless does well in the shade. It stands about twenty inches high above the pot and spreads out over a diameter of more than two feet. After a plant makes this size it should be in a ten-inch pot, and thereafter need not be moved for many years. I have a plant standing in soil which has not been removed nor enriched for five years, yet the tree is very luxuriant and prolific.

Clinton, N. Y.

E. P. Powell.

Hardy Andromedas.—At this season of the year *Andromeda Japonica*, with its rose-colored racemes of flower-buds which seem all ready to expand with the first long day of spring, and its abundant evergreen leaves, makes altogether an interesting sight. The flower-buds on *A. floribunda* are not colored so highly nor are its leaves so glossy, but still it is beautiful, and very valuable as a hardy evergreen shrub. Flower-buds of *Leucothoë Catesbæi* are of a deep rose color, and its foliage is also very attractive. A little later on, the leaves of this shrub will become bronzed and the color of the flower-buds much more prominent. *L. recurva* is a deciduous shrub, but its large racemes of rose-colored flower-buds are now most interesting.

Germantown, Pa.

J. Meehan.

Begonia Gloire de Lorraine.—This plant, from Messrs. Lemoine, adds another distinct plant to the series of hybrids of *Begonia Socotrana*. As is well known, this species is, perhaps, the most desirable of the *Begonias* for decorating conservatories in the winter from the fact that its flowers are more persistent than any others of the family. They endure for weeks, and, unlike other species of the genus, show no tendency to drop at every change of temperature or mistake in watering. *Gloire de Lorraine* is a hybrid between *B. Socotrana* and a summer-flowering Cape species, *B. Dregii*, which has a thickened root-stock and bears white flowers. The stems are numerous, rather thin and pinkish, and bear numbers of rosy flowers, much brighter in color than those of *Triomphe de Lemoine*, the last new hybrid offered by the same grower. The leaves of the new plant are also much more attractive, and show the influence of the Cape parent, while the leaves of the former are subpeltate and uninteresting. Flowers of *Triomphe de Lemoine* persisted on my plants last season some three months, and it is to be hoped that the new hybrid will show the same valuable habit. It can apparently be increased with ease from cuttings. The *Socotrana* hybrids now comprise the following varieties, which are all valuable and distinct plants: *Gloire de Sceaux* (Thiébaud & Keteleer), *Winter Gem* (Veitch), *Adonis* (Veitch), *John Heal* (Veitch), *Bijou*, *Triomphe de Lemoine*, *Triomphe de Nancy* and *Gloire de Lorraine*.

Calochortus Kennedyi.—Mr. Edward Sturtevant lately sent me some bulbs of this beautiful red-flowering *Mariposa Tulip*, which he collected lately in southern California, 150 miles from Los Angeles, with a sample of the material in which they were found. This material is a most interesting exhibit, and is helpful as showing one of the conditions in which the plant thrives. It seems to be composed almost entirely of well-decomposed stone, evidently granitic, from the glistening mica scales. It is dark in color, with only a small proportion of mold. It contains apparently not a trace of clay or compacting matter; and, judging from this exhibit, the bulbs of this *Calochortus* are in well-drained places with no decomposing or fermenting matter near them. Not many of us have such material in which to plant, though the drainage is easily managed. The nearest easily available material with the same texture that I can suggest is burnt earth with a trace of loam or leaf-mold. Mr. Sturtevant says he had to gather the stock with a pick, as the ground was very hard and dry in November, and the bulbs were resting some six or eight inches deep, out of reach of the frosts which sometimes occur in the locality, which is on the hills, 3,000 feet above sea-level. This would again indicate that we must keep these bulbs dry, under cover, later than I had supposed necessary. The bulbs received are plump and show no indication of moving, though some which have been in a pot outside with the Dutch bulbs, and covered with leaves, have been moving several weeks.

Elizabeth, N. J.

J. N. Gerard.

Correspondence.

Horticultural Progress in France.

To the Editor of GARDEN AND FOREST:

Sir,—Some interesting steps are contemplated by the City Council of Paris for the improvement of the horticultural work in the public gardens and parks. It has been known for some time that the municipal nurseries at La Muette were to be removed, *extra muros*, into the grounds of the Bois de Boulogne. Two advantages are to be derived from that step—the location of the new propagating establishment is to be much larger and in better condition, as far as pure air is concerned, and a good amount of it fit for building-ground will be set free by the scheme, and, beyond doubt, the sale of that ground will defray most of the expense needed for starting the new nurseries.

The location of the new establishment is close to the fortification ditch and between the Bois de Boulogne entrance at La Maziote and the Porte Dauphin—the main entrance from the Champs Elysees.

This, however, is but a material improvement. Much more interesting subjects have been under discussion during the last fortnight, and it has been determined to make a complete pomological collection on some grounds belonging to the city, in quite a different location—the Bois de Vincennes. These two municipal establishments will then be opposite each other, east and west of Paris, and quite close to the walls of the city.

All Frenchmen who are more than fifty years of age, and interested in pomology, will remember the pomological collections at the Pépinière du Luxembourg. There our best professors gave their lectures to a large audience of professional and amateur pupils. The collection of Grapes was specially large and celebrated. The reduction in the area of the Luxembourg grounds caused the much-regretted dispersion of the collections; and these grounds, which before the Revolution had contained the celebrated nurseries of the Pères Chartreux, who were, in fact, the first originators of the collections, retained but a limited number of fruit-trees, almost exclusively Pear-trees.

It seems to be a happy thought of the Parisian authorities to renew the tradition of patronage given by the French capital to horticultural studies. As far as the present projects are elaborated, space and financial resources will be granted for the pomological collection, special attention being given to the Vine. The grounds will need some improvement, but these obstacles are of small moment when we consider the unlimited resources of this city in workmen and machinery.

The city has already established a school of arboriculture in the Bois de Vincennes, quite near to the Porte Daumesnil. In this place are cultivated all the ornamental trees and shrubs that are used in the parks, squares and avenues of Paris. In fact, many other beautiful and interesting trees and shrubs have been gathered there by the learned director of the school, Professor Changueraud, and were it not for its lack of size and the inferior quality of the soil, the Ecole d'Arboriculture could be made an arboretum of the highest character. A well-selected orchard, although limited in size, is part of the school, and some forty young people receive there very good horticultural instruction almost free of charge.

The new grounds for the pomological collections will be just opposite the Ecole d'Arboriculture, and it is thought by many of the City Council that some space should be reserved for floriculture, and that a general faculty for teaching horticulture should be founded in connection with these new establishments. Vincennes and Neuilly are close to the Porte Daumesnil, near which a number of market-gardeners live, and instruction in the cultivation of vegetables would naturally become a part of the programme of the contemplated school. Anything that distinctly promotes horticulture or any of its branches in France will be a public boon.

The elections are just over at the French Horticultural Society. The First Vice-President, Monsieur Henri de Vilmorin, was re-elected for two years. Some slight changes were made in the staff of the society, the newly elected ones being actual horticulturists. Amateurs and scientists are replaced by intelligent men who make a business of horticulture. No doubt, it is best for a national society to have a fair proportion of its members chosen from every class.

Botanists will be glad to know that the Abbé Delavay, who has collected so many new plants and seeds, is again in western China. Some new discoveries are to be looked for, unless he is prevented by his failing health, which has been much shaken by his long residence and apostolic work in China. A good many Chinese plants have also been received at the Jardin des Plantes as dried specimens from other French missionaries in western China, and a number of species are soon to be described.

The taste for dendrological collections is, fortunately, not extinct in France, but I can only speak here of one experiment of cultivation in pure sand, made near the sea-shore in Brittany, by an amateur. It had been asserted that no garden could be made near St. Malo, and that no tree or shrub, except the Tamarisk, could survive there. But, notwithstanding many outspoken predictions of failure, our friend began many trials with native and exotic plants. He has succeeded beyond all expectation, and has now a good selection of trees in his garden. The gray foliage of *Populus Bolleana* towers above a dark green mass of Monterey Cypress, while *Elæagnus angustifolia* and other species of this genus, with the common and purple Barberries, give a rich variety of color. Even a lawn was created in the clear sand by planting young seedlings of

Bupleurum fruticosum and cutting the shoots evenly at some six inches from the ground. To me this seems an achievement worth putting on record.

Paris.

X.

Local Climates in California.

To the Editor of GARDEN AND FOREST:

Sir,—During the holiday week I went up the mountain-side immediately behind the town of Ukiah. The weather was perfectly clear, although there had been a rain-storm a few days before; the thermometer stood at about twenty-five degrees, Fahrenheit; the mud was frozen hard and frost crystals showed everywhere in the loose soil. At about 200 feet above the level of the town I reached a belt where, instead of frost, there was a dew and an air like that of spring. This belt was about a quarter of a mile wide, and perhaps the difference in altitude of its two borders was 300 feet. Above this I came again to frozen ground and frost crystals. At both edges of this belt the line was so sharply drawn that two rods rarely intervened between the frozen and the frostless ground. The soil at this point of the hill-side, though of good quality, is not cultivated, but half a mile to the southward a grove of twenty-five Orange trees, which are now loaded with good fruit, is flourishing near the lower edge of the warm belt. On Christmas-day a correspondent wrote from Sky Ranch, which is north of this place and 1,600 feet above the sea-level, that his Strawberries and Raspberries were in bloom and showing ripe fruit; that the leaves were still green on his deciduous trees; that Limes, Lemons and Oranges were thriving.

These thermal belts I shall not try to explain, and eastern people are often puzzled over the statement that oranges ripen sooner one hundred miles north of San Francisco than in southern California. The northern Citrus belt, as it is called, is only a repetition, on a large scale, of this phenomenon which I have described—namely, a belt lying within certain altitudes on the mountain-slopes. It is only within recent times that these warm zones have been studied closely, but better acquaintance with them has demonstrated the fact that they exist throughout the northern part of this state, and that in many places where the Citrus and other tender fruits will not live in the valley climates, there are points near at hand in the same latitude where they are safer from frost than they are several degrees farther south. As yet these facts are put to comparatively little practical use, but as the country becomes more thickly settled it is not improbable that these elevated warm lands will be much sought for. It will be very important to know how much these belts vary in altitude from year to year, if, indeed, they practically vary at all, and whether the cutting down of the woods and other changes in the earth's surfaces which are made by man will have any effect upon them.

Ukiah, Calif.

Carl Purdy.

Recent Publications.

Maize: A Botanical and Economic Study. By John W. Harshberger, Ph.D. Philadelphia: 1893.

This is the second part of the first volume of *Contributions from the Botanical Laboratory of the University of Pennsylvania*, and its one hundred and twenty-five beautifully printed pages, with maps and plates, summarize in convenient and systematic form our knowledge of Indian Corn. The evidence that the plant originated in a region of restricted limit somewhere north of the Isthmus of Tehuantepec and south of the twenty-second degree of north latitude and more than 4,500 feet above the level of the sea, is marshaled in a very convincing way by Mr. Harshberger. Eminent botanists have claimed that the cereal is indigenous to the Eastern Archipelago; others hold that Chi'a is its original home; others still, consider Japan the place of its origin, but the arguments when thoroughly sifted amount to little, and the elaborate array of evidence from archæology, history, ethnology and philology which is here adduced to show that Maize is of American origin is substantiated by facts from botanical and meteorological science. It is ingeniously argued that the Mayas first cultivated Maize, and since it is probable that this people did not emerge from savagery until after the Christian era, the beginning of its cultivation is therefore fixed after that date. From them it probably passed southward through the Isthmian tribes to Peru and Chili, and was carried by the

Caribs from the South American continent by the way of Guiana and the West Indies to Florida. A map of the Western Hemisphere is given, which shows its original home, the limits of its primitive cultivation, its distribution in North and South America before the year 700 A. D., and its limits in the year 1000. Grains of it were sown in Spanish, Italian, French, German and English gardens in the sixteenth century, and it was soon naturalized in Turkey, the Danubian countries and Hungary. It soon spread to other regions, and it is now grown throughout both American continents, in the plains which border on the Pyrenees and the valleys which descend from the Jura, throughout Italy, Austria and Hungary. It is cultivated in Asia Minor, India, China, the Philippine Islands, the Malay Archipelago and Australia, and furnishes in all these places a most important food for man and beast.

The careful arrangement of the arguments which establish the origin of the plant is preceded by a botanical chapter on its gross anatomy and histology, together with an elaborate bibliography. After this comes a careful study of the chemistry of the plant to determine its value as food, and to show what elements it takes from the soil and to explain how its by-products can be utilized. A discussion of the physiological properties of the plant in relation to its cultivation is most interesting, as the facts adduced explain why the Corn crop is especially valuable in arresting the waste of nitrogen from the soil. The varied uses of the plant as food for man and domestic animals, as a medicinal plant and in the production of sugar, paper and oil, as well as other economic purposes, are then discussed, and it may be noted as a point of interest here that the cobs yield a large supply of potash. A mill which will shell five hundred bushels of corn in an hour turns out 70,000 pounds of cobs in a working-day, which are used as fuel in the mill. The refuse ashes are collected, and as they contain more than seven per cent. of potassium carbonate, a factory of the above capacity would produce 535 pounds of this chemical in a day. A brief chapter on the relation of this crop to the agricultural prosperity of the country is interesting, if not altogether convincing, but the point seems clear that the increased export of maize would be a sure and practical benefit to the farming interests of the country, and it is quite possible, as Mr. Harshberger holds, that this greatest arable crop which we grow, the crop which occupies the largest portion of the cultivated area of the country, and has never been known to fail, is destined to occupy the place in America that rice fills in India, China and Japan, that cassava fills in South America, and that sago occupies in Borneo, Java and the Indian Archipelago—the staple food of man.

How to Grow Cut Flowers. By M. A. Hunt. Published by the author. Terre Haute, Indiana.

The wonderfully rapid growth of the trade in cut flowers throughout the country during the last fifteen years has proved a great stimulus to American enterprise and invention, and no branch of horticulture has seen more marked changes in methods practiced and of appliances used than commercial floriculture. The entire system of constructing greenhouses and heating them has been practically revolutionized, and the manner of cultivating different kinds of flowers has been so completely changed that old treatises on the subject are almost useless as manuals of every-day practice. That Mr. Hunt's volume, published a year ago, supplied an urgent need is proved by the fact that a second edition has already been called for, and the thousands of people who are interested in a business which represents millions of capital will be glad to have this handbook of ready reference. In comparatively small towns all over the country wide-awake young men are embarking in floriculture as a business, and a volume like this, if habitually referred to, will prevent many costly mistakes and discouraging experiences. Of course, nothing takes the place of personal study and observation, but

advice like that offered in this book from a man who has been educated in the hard school of experience, and who remembers his own failures as well as his successes, will, no doubt, be of great value to many beginners as well as to those who are already conducting active business. The first chapter, on greenhouse-construction, gives in a condensed form the argument for the three-quarter span with a southern exposure, and explains all the modern improvements in glazing and ventilation. The best methods of heating by steam and by hot water, and their comparative value, are also set forth at length. The latest results of the studies in our experiment stations on the diseases incident to plant-life, as well as the insects which are injurious to plants, are brought together in a compact form, so that the struggle with these enemies can be conducted with intelligence and the best modern appliances. The cultural notes on various plants, together with the methods of propagation, will be found of interest to every owner of the smallest greenhouse as well as to commercial florists; and the practical answers here given to the hundreds of questions which come up every day for decision by every one who has the care of even the smallest collection, will be found, in the main, sound and helpful. The index is very complete, so that the learner will have no difficulty in finding just what he wants.

Letters to Marco. George D. Leslie, R. A. New York: McMillan & Co.

This is a collection of letters which were actually written, and they are the record of observations on the commoner plants, birds and other natural objects in the counties of southern England. They are far from being scientific, however, and show little of the spirit of research, but are the spontaneous expression of one who loves nature for its own sake. They contain, therefore, no great amount of information, but, after all, make pleasant reading for a casual half-hour when opened at random. It is the pictorial aspect of things which always appeals to the writer, and if he never ventures any profound observations upon subjects which come within the range of his experience, he is always ready to throw off a little word-painting which will linger in the memory and stir the imagination. There are many illustrations, too, which are evidently copies of the hasty pen-and-ink sketches which originally accompanied the letters, and they are more truly in harmony with the text than more elaborate drawings would be.

Notes.

The authorities of the State University at Seattle, in Washington, are about to establish an arboretum on their campus, three hundred and fifty acres being devoted to the purpose.

The American Dewberry, probably *Rubus trivialis*, is said to have borne fruit profusely in the Shaharanpur Botanic Gardens, and it promises to be one of the most important of the exotic fruits recently introduced into India.

We have received from Mr. E. E. Risien, of Texas, some nuts which he calls the Royal Paper-shell Pecans. The nuts are of large size, and the shell is so thin that it can be broken between the thumb and finger. The meat is of excellent quality, and is about the same size and form as that of a good-sized Hickory-nut. Some persons who visited the Horticultural Building at the Columbian Fair may remember Mr. Risien's exhibit of nuts and his interesting series of photographs to show how large wild trees have been top-grafted with cions of these fine varieties.

The last part of the *Dictionnaire Pratique d'Horticulture et de Jardinage* carries this important work through Deutzia. It is, it will be remembered, the French edition, much enlarged and improved, of Nicholson's *Dictionary of Gardening*. It is published by Octave Doin, 8 Place de l'Odéon, Paris, and will be finished in eighty parts, of which twenty have now appeared, each part containing forty-eight pages and a colored plate in addition to the numerous wood-cuts in the text. The price of each part is one franc and a half, or ninety francs in advance for the complete work. The *Dictionnaire Pratique*

d'Horticulture is one of those invaluable works of reference which should find a place in every botanical and horticultural library.

Thirty-nine different sorts of Indian woods have been tested at the Forest School in Dehra during the past twelve years, the experiments being made with perpendicular posts, half under and half above ground. Recently it was found that only three of the posts remained sound—those of Himalayan Cypress-wood, Teak and Anjan-wood. These had been exposed, respectively, for ten, nine and seven years, and were in excellent condition, while all the other sorts had fallen a prey to rot and the attacks of white ants.

Professor Wickson, of Berkeley, California, is sending out plants of what is called the Logan Berry, which appears to be a cross between the cultivated red Raspberry and a variety of the California wild Blackberry. It was raised from seed by Judge J. H. Logan at Santa Cruz in 1884, and bears fruit of striking characteristics. The berry is sometimes an inch and a quarter long, shaped like a blackberry, colored like a dark red raspberry, and combines the flavors of the two fruits. It is hard and ships well, and has been successfully marketed in quantity. On the experiment-grounds of the University Station it has fruited for three years; the foliage seems rust-proof, and no other disease has been noticed on the plant.

No European town has been more conspicuously improved in recent years than Sofia, the capital of Bulgaria. A series of splendid boulevards has been cut through the mass of old narrow streets and Turkish houses, one encircling the city, while others run across it in various directions; and a still more spacious avenue, 197 feet wide, and set with six rows of trees, leads from the centre of the town to the railway-station, while another, called the Boulevard Stambouloff, runs from the same point to the new park. This park is very large, and is said to be well planted. A great public garden has also been formed in the middle of the town, with smaller gardens at various points, and a nursery, covering a hundred acres, has been established in the suburbs, where plants will be grown for the public grounds, and will also be sold to private purchasers.

Last week the temperature was lower in California than it has been in twenty years, the mercury in many parts of the Orange-growing sections indicating from four to six degrees below freezing. As the oranges are just approaching maturity, the result would have been very damaging unless artificial means for counteracting the effect of the frost had been used. As a precaution, gas-pipes had been laid in many groves, and the gas was burned at night to elevate the temperature above the danger-point. In other groves piles of wood, saturated with coal-tar, had been arranged at intervals, and when these were set on fire a dense smoke was created, which covered the orchard like a cloud and protected the fruit. Probably no more than five to ten per cent. of the crop will be lost in Riverside, Los Angeles and San Bernardino counties. As the crop is one-third larger than it was last year and of fine quality, the loss will hardly be felt.

In the January number of the *Botanical Magazine* there is a figure of *Erythroxylon Coca*, of South America, interesting as being one of the plants from which the active alkaloid cocaine is obtained. The leaves of this plant are used in immense quantities from one end of South America to the other as a masticatory for maintaining and restoring muscular strength; and "its cultivation covers an enormous area; Bolivia produces 7,500,000 pounds of the dried leaf annually, Peru 15,000,000, and the product of the Argentine Republic, together with that of parts of Brazil, must be enormously greater." In spite of the universal belief in the value of the leaves in South America, Dr. H. H. Rusby, of the New York College of Pharmacy, who has lately made a careful study of the physiological action of cocaine and has published the result of his investigations in the *Therapeutic Gazette* of this city, under the title of "Cocaine at Home and Abroad," demonstrates that "the effects of cocaine as a nerve stimulus applied to intellectual and emotional activity are ruinous. It takes away appetite, abolishes the sensations of hunger and thirst, lessens waste during exertion, and decreases the exhaustion of ill-fed laborers and travelers. Beyond this, cocaine has no supporting or nourishing power whatever, and its essential action is enfeebling. Every attempt made to support by it athletic competition has resulted in failure, or even disaster."

Excepting Orchids, cut flowers are still lower in price than during the holiday season. Next to cattleyas and cypripediums, roses are more generally used than any other flowers

in expensive arrangements, and although only three or four immense buds of American Beauty are used together in a vase, the supply of these flowers is taken up each day. They cost a dollar to a dollar and a half apiece. It is said that these flowers are more often used to invite attention to the costly vases which contain them than for their own beauty. Tea roses of choice quality cost two dollars and a half and three dollars a dozen, a third less than the price at New Year. A hundred double violets now cost only a dollar and a half, the less fragrant single violets but fifty cents. The first freesias of the season are fifty cents a dozen, and tulips and narcissus cost two or three times as much. The demand for growing plants for home decoration is steadily increasing, and the supply of some kinds, like the Otaheite orange, for example, has been almost entirely exhausted. Good flowering-plants of *Laurestinus*, in pots, are occasionally seen, and *Camellias* are likely to become fashionable once more, as the flowers are even now often called for, to be worn in button-holes. Leaves of *Galax aphylla*, from North Carolina, are much used in mantle decorations, and even in combination with Orchids, instead of more delicate foliage.

Mr. E. G. Hill, in a late number of the *Gardeners' Magazine*, of London, calls attention to the fact that several of the *Chrysanthemums* to be distributed in 1894, and certificated at various exhibitions as the best of a specified color, did not come into competition with each other. It has heretofore seemed impossible to exhibit all the new varieties together in one place. Again, in some shows the right to give a name to a prize-winning seedling has been reserved by the individual offering the premium. As the exhibitions in different parts of the country were held during the same week, and some schedules required seedlings to have a name attached, these conditions prevented the competition of the same varieties in different cities. The need of a central tribunal is suggested, whose decisions will be received as authoritative, where all new *Chrysanthemums* may be compared and judged. In this same article, Mr. Hill expresses surprise that some of the varieties most highly esteemed in America are never seen on the exhibition lists in Great Britain. Among these are H. E. Widener, Mrs. Jerome Jones, Golden Gate, Edward Hatch, Ivory, Flora Hill, Harry May, Mrs. Maria Simpson, Minnie Wannamaker, Mrs. A. J. Drexel, Frank Thomson and Harry Balsley. The query is all the more pertinent since such varieties as C. B. Whitnall, Eda Prass, George W. Childs and Colonel W. B. Smith seem to do well in England, and from the success of these varieties under English methods of culture and in the climate of that country, it is reasonable to suppose that other American varieties would do equally well there.

Flame Tokay and Emperor grapes, held in cold storage since the last of November, are still offered, but on account of inferior condition they do not command as good a price as they did when they first arrived. Catawba grapes, from western New York, have advanced in price to twenty cents for a five-pound basket. While choice Florida oranges, from the Indian and Halifax River districts, are in demand at \$2.25 a box, at wholesale, fairly good fruit can be had for a dollar less, and is retailed on the street-stands as low as fifteen cents a dozen. Fancy grades of Tangerines and grape-fruit have a steady sale at good prices, but lower grades are without buyers, and Mandarins find few purchasers at even very low prices. Several cargoes of Mediterranean fruit will soon be added to the large supply from Florida, 178,000 boxes of lemons and 21,000 boxes of oranges being now on the way to New York, Philadelphia and Boston. Spitzenberg apples and Newtown Pippins are favorites in the stocks of retail fruiters. These sorts and good Baldwins bring the highest price, six dollars a barrel. Hot-house strawberries, from New Jersey, have fallen fifty per cent, that is, to \$1.50 for a small cup of large and beautiful berries. Field-grown pineapples, from Florida, cost thirty-five cents, and those grown under glass in the same state sixty to seventy-five cents each, while luscious specimens of this fruit from English hot-houses sell readily at a dollar and twenty-five cents each. Among vegetables now in market are new carrots from Charleston, and spinach and kale from Norfolk; tomatoes from Key West and Florida are as low as fifteen cents a quart, while new beets, from Florida and from Bermuda are only five cents a bunch. The best cucumbers come from Boston hot-houses, and these cost twenty cents each. Forced rhubarb from New Jersey costs twenty cents for a few small stalks. Hot-house asparagus is now an expensive luxury, a half-pound of tender stalks costing a dollar and a half. This vegetable does not come from Charleston until March, although a limited supply from further south reaches here earlier.

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The Improvement of Cultivated Plants.

SOME months ago, in speaking of the proper work of experiment stations, we ventured the opinion that some of the elaborate comparative tests made of different varieties of fruit and vegetables might be left to individual cultivators. The proper region for station effort lies beyond the field which can be effectively worked by ordinary farmers and gardeners. In all problems which demand trained observation, scientific accuracy, costly apparatus and the accumulation and classification of data which it requires years to gather and sound judgment to interpret, the expert scientists of the stations ought to be able to investigate effectively and report intelligently, while to answer such questions would be impossible for ordinary farmers and fruit-growers. Any grower of Strawberries, however, is competent to test a dozen or so of the best varieties on his own land every year, and to decide for himself as to their comparative value for his purposes. Indeed, he will be compelled to decide for himself at last, because the results of one or two seasons' trial on the station-grounds, which may differ entirely in soil and exposure from his own, furnish no guarantee whatever that the plants will behave with him as they did when reported on. Of course, the labors of the stations in this field are not actually useless; nevertheless, it seems clear that organizations of trained workers can render agriculture a higher service by devoting themselves to the discovery of the broader truths of science upon which the successful practice of agriculture and horticulture must always be based.

We have recently received a letter from an officer in one of the stations, in which, after alluding to our position on this point, the writer asks if we do not consider the improvement of fruits and vegetables an object to which the experiment stations could profitably address themselves. Beyond question it is. But the testing of a hundred varieties of Tomatoes or Strawberries every year at several different stations has not enriched our horticulture with any improved fruits or vegetables, so far as we know, and has done little to popularize any new plants which originated elsewhere. But when any station begins some systematic experiments in the breeding of new plants, and perseveres in

the work long enough to establish any principles, we may hope to receive some instruction. This is a work which requires some knowledge of the laws of heredity and variation, and since no decisive answer to the inquiries made of nature can be obtained until after a series of years, this certainly is a field of effort which the stations could occupy with wisdom and profit.

All the fruits and vegetables and grains that are grown in our farms and gardens have been bred up from their wild condition. If they had originally any quality which was useful to man, by proper care and selection this has been strengthened until it has become a fixed element in their constitution, which could be handed down to succeeding generations. Useful plants have been perpetuated and improved in this way, and the good qualities of each of them have been multiplied and established as a part of their hereditary nature. Of course, this improvement has not been brought about systematically and scientifically, but by the long and bungling efforts of man through generations. It has taken centuries to produce the best varieties of Cabbage and Cauliflower and Rutabaga from the wild plant on the western shores of Europe, and the Tomatoes and Potatoes in our gardens, when compared with the wild plants in the mountains of South America, will show what even unskilled selection can accomplish in the course of years. But these results could have been reached much sooner if the selection and crossing had been made by men of adequate knowledge and with a well-defined purpose. In the instructive paper read by Monsieur Henri L. de Vilmorin at the Congress of Horticulture, in Chicago, last summer, an example is given to show how the wild form of a plant can be changed if it receives kind treatment at the hand of man and is helped to adapt itself to his purpose. The changes may be slow and gradual at first, and often scarcely noticeable, but if the effort is persisted in these modifications will become greater and greater, and they will in time become much more rapid than the earlier ones. The account of this experiment, which Monsieur de Vilmorin has been conducting for more than twenty years, is here given in his own language:

Since 1872 I have been cultivating one of our Parsley-worts, *Anthriscus sylvestris*, a European weed, in order to change its slender and much-forked roots into fleshy, straight and clean roots like those of the Parsnip. Among the first package of roots raised from wild seeds a dozen were selected which had a tendency in their roots to larger and straighter bodies. Each root was planted separately and its seed harvested separately. Of a dozen lots obtained, eight or nine were discarded, and roots were selected only from such lots as exhibited some trace of variation. The next year a dozen roots or so were chosen, and a drawing of each root was made, which was planted separately and its seed harvested separately, as before. I have sketches of all these roots selected, so that it is possible to follow every stage of variation from each plant living at this day. For the first ten years the changes were slight, but now they are more and more marked with every generation, and in some of the lots the straight and smooth roots are the most numerous. My object was not to create a new vegetable, as the roots of *Anthriscus sylvestris* have such a strong taste of camphor as to be quite uneatable, but simply to show that careful and continuous selection could quite transform a wild plant in years which do not equal a quarter of the span of many human lives. Like results had been shown by my grandfather with the Wild Carrot, only these were open to controversy on account of possible crosses between garden varieties and the wild strains. But no such objection can be raised in the case of my Parsley-wort.

This experiment indicates a line of work which might be well taken up by any station, but it will be observed that it is altogether different from the testing of a hundred chance varieties of any plant, especially when nothing is known of their pedigrees. How much a practical grower can accomplish by taking advantage of these laws of variation and heredity is strongly shown in the production of the Osage Melon in a market-gardening region a few miles from Chicago, on the Michigan shore of the lake. Last year Professor Bailey explained in this journal (vol. vi.,

p. 412) how, by persistently and uniformly selecting year after year with an exact and unvarying ideal in mind, aiming constantly at precise shape, size, color, flavor and texture, Mr. Roland Morrell at last secured a Melon which exactly met the requirements of that region. A recent bulletin of the Agricultural Experiment Station of New York, at Geneva, records an attempt at the systematic breeding of Strawberries, although nothing has yet been learned beyond the fact that one particular variety, Johnson's Late, seems to be a desirable parent when an attempt is made to breed late varieties of Strawberries, and that certain other varieties gave a large proportion of excellent seedlings. How little orderly work has been done in this direction will be understood from the statement in this bulletin, that of the hundreds of varieties of Strawberries that have been introduced into cultivation the parentage of but very few is known. The testing of any number of chance seedlings will be of very little account, and will add nothing whatever to the sum total of our knowledge of horticultural practice or natural law. If, however, some one good variety is chosen, and selections from its seedlings is made for twenty years in succession as carefully as those made by Monsieur Vilmorin in France, or by Mr. Morrell in Benton Harbor, we might reasonably expect some improvement in the fruit. At all events, we should be accumulating data from which to deduce some of the laws in accordance with which certain qualities in plants can be modified and transmitted, so that we can breed plants to a given standard, with greater assurance of success.

Notes for Mushroom-eaters.—I.

DURING the past summer an unusually large number of cases of poisoning from eating fungi have been noticed in the papers. If one may judge by their names, a large proportion of the sufferers were foreigners, and it is probably correct to infer that they were recent immigrants from countries where fungi form a more important article of food than in our country. A singular circumstance is that in almost all parts of the north and west the past summer was unusually dry, in some places very dry, and there have been comparatively few of the large, fleshy fungi which are selected for food; consequently one would have supposed that the number of persons tempted to eat fungi would have been smaller than usual. The comparative scarcity of the species generally eaten may possibly have led fungus-eaters to be less discriminating in the species gathered and to attempt to supplement the scanty crop of the species which they knew by experience or tradition to be edible by other forms which they hoped might be equally good. Since the species commonly recognized as edible in the northern states are, in great part, identical with the common edible species of Europe, it seems strange that foreigners, who are supposed to recognize without difficulty the edible forms in their native countries, should have difficulty in distinguishing the same forms here, for, in spite of the number of species of fungi indigenous to this country and not found in Europe, the recognition of the traditional edible species is no more difficult, and the number of poisonous species which might be mistaken for them is no greater here than there.

Nevertheless, it must be admitted that the number of persons poisoned by eating Toadstools, to use the common name, is on the increase in this country, and the increase is mainly due to the increasing number of ignorant foreigners. As a rule, native Americans are not often fungus-eaters, for, apart from their dread of being poisoned, fungi are not to their taste, especially when submitted to the treatment of the ordinary American cook. There is, however, a constantly increasing class of well-to-do Americans who are beginning to make use of our native fungi for the table, and they frequently ask for information as to the means of distinguishing the edible from the poisonous species. The present notes are an attempt to furnish to that portion of the public represented by the readers of

GARDEN AND FOREST information on the subject, which shall be, as far as possible, free from technicalities familiar to the expert botanist, although accurate as far as it goes. The problem of enabling the uneducated masses to distinguish at sight our edible and poisonous forms is one which is too difficult to be attempted at present. Even in countries like France, where for many years there have been excellent popular works on the subject, the attempt to instruct the uncultivated classes has met with little success, and it seems wiser to try first to give the necessary instruction to educated persons, trusting that in time they may spread the information among the more ignorant, who, as is well known, learn more quickly by word of mouth than from books and tracts.

The popular belief in this country is that the larger, fleshy fungi may be divided practically into Mushrooms, or edible species, and Toadstools, or poisonous species. Hence the question is very often asked, How can one tell a mushroom from a toadstool? A botanist is at a loss how to answer this question, since the assumption implied by the question that there are two distinct classes, one good and the other bad, is not at all correct. To speak more accurately, a toadstool is any sort of a fleshy fungus shaped more or less like an umbrella, that is, with a stalk and more or less expanded top, no matter whether it is edible or poisonous. The Mushroom of commerce, the one sold in the market and cultivated in beds, is one particular species of toadstool, *Agaricus campestris*, a species also found growing wild. Although this is the only universally cultivated species in Europe and this country, a considerable number of other species of Toadstools are known to be edible, a much larger number are, as far as we know, not poisonous, and a certain number are poisonous to some extent, while a comparatively small number are actually known to be highly poisonous. With fungi, as with other articles of food, edibility is a comparative term. Some species, as *Agaricus campestris* and *Coprinus comatus*, would be relished by most persons; others would be liked by persons having a natural fondness for fungi, but would not be considered worth eating by others; while a large number of species are harmless, but so unpalatable or so difficult of digestion that they would be rejected by all except the very small class of those who may be called fungus-cranks, who feel it their duty to like all fungi, except those absolutely poisonous.

To describe all our different forms large enough to be noticed by those who are not special botanists, and tell whether they are poisonous or not, would be quite out of the question, for in any locality there are hundreds of them. In fact, in the case of many of our species there is as yet no scientific record of their edible properties. We know only that some species are certainly edible, and that others are certainly poisonous, but with regard to the rest we can only infer from their botanical relations to the better-known species that they are likely to be poisonous or otherwise. The details can only be mastered by the few who make a special study of the subject. Here we can only point out definitely a few of the commonest of the best edible forms, with hints as to the poisonous forms which might be confounded with them, and state a few rules which should be learned by all who desire to collect fungi for food. The rules are empirical, and there are exceptions to them, but they have a certain practical value. There is nothing novel about them, for they have been given over and over again in books, until botanists wonder why they are not more widely known. For the understanding of the rules it is necessary, as a preliminary step, to call attention to the general structure of the fungi known as toadstools.

A toadstool is first recognized as a small, more or less egg-shaped mass on the surface of the ground, trunks of trees or other substrata. This stage is popularly called the "button." The button, if the weather is favorable, quickly shoots up into the full-grown toadstool. It is often said that toadstools grow in a night. This is frequently true, if by the expression "grows up" we mean

the development of the toadstool from the button, but it is not at all true if, as is generally the case, it is meant that the complete development of a toadstool is accomplished in that time. The buttons arise from a tangled mass of delicate threads, known to botanists as the mycelium, and to mushroom-growers as the spawn, which is found in the ground or substance on which the toadstool is growing, and it may be weeks, months, or even years, before the spawn begins to produce buttons. The threads of which the spawn is composed extract from the substratum and store up the material by means of which the rapid growth of the toadstool from the button is accomplished. Comparing roughly the function of the spawn in the ground and that of the toadstool above ground with those of the organs of higher plants, the spawn may be said to correspond to the roots, stems and leaves, while the toadstool itself, which is merely an arrangement for bearing the reproductive bodies, or spores, may be compared to the fruit containing the seeds.

Harvard College.

W. G. Farlow.

Exotic Trees and Shrubs for Florida Gardens.—I.

ABELIA RUPESTRIS, a native of China, is a dense evergreen shrub, which grows to perfection in Florida, even on the poorest sandy soil, withstanding droughts and occasional frosts with impunity. The flower-buds and the outside of the blossoms show a pale rose-color, while the inside of the tube-like flowers is white. They exhale a delicate fragrance, and are produced from June to late autumn in great abundance. The Abelia, in Florida, grows six or eight feet high and to an equal breadth, and is beautiful at all seasons, especially when covered with flowers and surrounded by humming-birds. The variety, *Grandiflora*, which originated in the gardens of Mr. Thomas Hanbury, La Mortola, Italy, has larger and finer flowers than the type. Among other Abelias which should be grown in Florida are *A. floribunda*, a native of Mexico, with rosy-purple flowers in axillary clusters—it is a very difficult shrub to obtain in this country; *A. serrata*, from China, with pale red flowers, and *A. triflora*, of Hindostan, with pale yellow flowers.

Acacia Farnesiana, *Opoponax*, *Papinac*, when carefully grown, is a very handsome tree; left to itself it may assume a straggling form. Its pinnate foliage is delicate, and the yellow flower-balls, appearing in abundance throughout spring, summer and autumn, are deliciously scented. I have seen trees fifteen to sixteen feet high, with a head twenty to twenty-two feet in diameter, not more than seven or eight years old. If this tree receives some care and a little fertilizer it grows rapidly. I have noticed this *Acacia* in south-western Texas, far from the habitations of man. Its native country seems to be unknown, but the first plants were introduced to cultivation from San Domingo.

Albizzia Julibrissin, the Abyssinian Locust, Silk-tree or Mimosa, here attains a height of twenty-five to thirty feet. Early in the season it is literally covered with white flowers, which are strongly fragrant. It grows well in sandy soil, and is much planted as an ornamental tree as far north as Augusta, Georgia, and will live in sheltered places as far north as New York. It inclines to a habit of growth which is too open, but pruning will insure a compact head. The Australian *Acacias*, which grow exceedingly well in California, do not seem to find the Florida climate congenial.

Aralia papyrifera, from the island of Formosa, thrives well, and its fine tropical appearance makes it valuable for producing landscape-effects. According to Mr. E. H. Hart, of Federal Point, in this state, it delights in a moist, half-shady spot; it is a good plant for hiding unsightly spots. When in bloom it is superb, and every one stops to admire it.

Ardisia crenulata, so much prized for its bright berries in northern conservatories, delights in shade and in rich soil,

and the same is true of *Skinnia oblata*, *S. Japonica*, *Aucuba Japonica* and *Achania malvaviscus*. Abutilons of all kinds do well everywhere in south Florida, if carefully fertilized and watered.

Bauhinia acuminata thrives admirably on my place and blooms, when quite young, from May to December. The flowers are pure white and about three inches in diameter. *B. alba* is a taller grower, and *B. purpurea* is an exquisite winter-flowering small tree or shrub. The flowers vary in color from whitish to purple. Being of a very robust habit, this *Bauhinia* in a few years attains a height of fifteen feet. Although not perfectly hardy, the *Bauhinias* are well adapted to the sandy soil, and sprunt readily from the root-stock when frozen down. They are natives of the tropics.

Cestrum aurantiacum, a native of Central America, attains a height of ten feet in one season, flowering profusely in October and November. If cut back in spring it forms a compact head, the orange-yellow flowers appearing in terminal corymbs. My plant is cut down each winter by frost, but it sprunts readily in spring from the root. *Cestrum Parqui*, the Night-blooming Jasmine, from Chili, is one of the most interesting ornamental shrubs seen in Florida gardens. It grows to a height of fifteen feet and as much in diameter. The tubular flowers, which appear in dense corymbs, are greenish-white as they open at sundown and fill the air throughout the night with a delicious fragrance. A Florida moonlight night in late April and May is a season of enchantment. At this time the great flowering *Magnolia* has opened its white flowers, the *China-trees* and *Orange-trees*, the *Night-blooming Jasmine* and *Roses* are in bloom, and the indescribable melody of the mocking-bird's night song mingles with gales of fragrance. *Cestrum Newelli*, *C. elegans* and *C. Bondouxi*, all with red flowers, grow well on high Pine-land; while the hybrid *Cestrum*, *La Mortola*, is an exceptionally beautiful shrub with deep green foliage, tinged with purple. The flowers, which appear in dense terminal corymbs and in the axils of the leaves, are of a bright orange-yellow and exhale a spicy fragrance at night. The plant is robust and will prove a great acquisition for Florida. I raised it from seed obtained from Mr. Thomas Hanbury, who pronounces the plant a hybrid between *C. elegans* and *C. Parqui*.

Choisya ternata, the Mexican Orange-flower of the English, and the Clover-leaf Shrub of German gardens, is a beautiful plant when grown successfully. The leaves are clover-like, and the terminal white flower-trusses resemble *Orange-blossoms*. It attains a height of six and more feet, and is a native of Mexico. The specimens on my place which were planted in autumn looked well throughout the first winter, but did not grow in spring, and finally died. For ornamental planting in the Gulf states this would be a very decorative shrub. It has proved hardy in the southern and western parts of England with the protection of a wall.

Chorizema varium, *C. illicifolium* and *C. cordatum* all form beautiful shrubs in the greenhouses of the north. Of the first species I have seen specimens, four feet high and six feet through, literally covered with yellow and red pea-shaped flowers. All the Australian shrubs and trees thrive here except *Grevillea robusta* and the various species of *Eucalyptus*, which cannot for any length of time endure dryness at the roots. They must be well watered in the dry months. With a little care all these, as well as the beautiful *Banksias*, *Dryandras*, *Callistemons*, *Melaleucas*, *Metrosideros*, *Epacris*, from Australia, and the very beautiful *Leucadendron argenteum*, of the Table Mountain of the Cape of Good Hope, ought to flourish in Florida.

Clerodendron fragrans, a native of China, grows like a weed, and is found already on waste grounds and on roadsides. It spreads from the roots in such a way that soon large masses are formed which are not easily kept within bounds. The leaves have a very objectionable smell, but the fragrant, double, rose-like flowers, which are crowded into very compact corymbs, are very beautiful. In good soil the plant reaches a height of six feet. *C. viscosum*, of India, is a tree with very showy white flowers, the calyx of

which is rosy red. It grows rapidly in the open air even in the northern part of the state. *C. Siphonanthus*, of India, is one of the most common plants in the gardens of Florida. It grows eight to ten feet high, without branching, and, though not very beautiful, is always conspicuous, especially when covered with its dark bluish terminal clusters of berries.

Milwaukee, Wis.

H. Nehrling.

New or Little-known Plants.

Lonicera Korolkowii.

THIS handsome plant, which is conspicuous throughout the summer from the color of the pale glaucous green foliage, quite unlike that of the leaves of any other Honey-suckle in the collection, was sent to the Arboretum in 1881 by the late Alphonse Lavallée, of Segrez, in France, who had obtained it through Colonel Korolkow, of Moscow. Being unable to refer it here to any described species, it was sent to the Herbarium at Kew for determination, and, at our request, Dr. Stapf, finding it undescribed, has prepared the following description to accompany the illustration on page 35 of this issue, taken from a drawing made by Mr. Faxon in the Arboretum.

Lonicera Korolkowii has grown here into a stout spreading bush six or eight feet tall; here it flowers about the 1st of June and ripens its fruit early in the autumn. C. S. S.

Loniceræ KOROLKOWII, Stapf, (spec. nov.) Affinis *L. Xylosteo*, L., et *L. Tataricæ*, L., v. *puberulæ*, Reg. et Winkl., sed differt a priore foliis parvis (10-15 lin. longis), indumento tenuiore et parciore, bracteis bracteolisque minoribus, calycis lobis lanceolatis acutis, corollæ tubo tenuiore longiore glabro, labio supero multo profundius fissis, lobis elongatis, staminibus in parte libera vix pilosis, baccis minoribus aurantiacis; a posteriore foliis paulo minoribus utrinque fere semper acutis, nunquam truncatis vel subcordatis, bracteis brevioribus, bracteolis et calycis lobis eximie ciliatis, corollæ luteo-albæ tubo paulo longiore, lobis angustioribus.

Frutex 6-8 ped. altus ramis novellis tenuiter villosulis interdum purpurascens, vetustioribus griseis. *Folia* ovata vel elliptica, utrinque acuta, rarissime basi vel apice rotundata, 10-15 lin. longa, 4-8 lin. lata, membranacea, plus minusve glaucescentia vel pallide viridia, utrinque minute pilosula, imprimis in nervis, supra mox glabrata, nervis lateralibus utrinque 4, rarius 3 vel 5, valde obliquis, paribus 2 infimis approximatis, reticulazione supra leviter impressa, subtus minus distincto; petiolus gracilis, 2-3 lin. longus. *Pedunculi* graciles, minute villosuli, 4-5 lin. longi. *Bractea* filiformes, ciliatæ, bracteolis vix æquilongæ. *Bracteola* lateraliter plus minusve connatæ, ovatæ, obtusæ, ciliatæ, ½ lin. longæ, ovario triplo previores. *Calycis* lobii triangulari-lanceolati acuti ½ lin. longi, ciliati. *Corolla* luteo-alba in alabastro elongato-clavata, 6-7 lin. longa, apice saepe parce puberula, tubo tenui, supra basin leviter sed distincte gibboso, glabro, 3-3½ lin. longo, labio infero lineari-spatulato, 5 lin. longo, 1 lin. lato, supero quadrilobo, lobis 2 intermediis oblongis vel obovato-oblongis, 2 lin. longis, lateralibus ad ¾ separatis, lineari-spathulatis, 3-3½ lin. longis. *Filamenta* in parte corollæ adnata pilosa, in parte libera vix 2 lin. longa glabra vel subglabra, breviter exserta; antheræ lineares, 1½-1¼ lin. longæ. *Ovarium* ovoideum, saepe elongatum, glandulis perpaucis aspersum, caeterum glabrum, vix 1 lin. longum; stylus pilosulus. *Bacca* liberæ, globosæ, 2½ lin. diametientes, aurantiacæ, calycis basi annuliformi coronata.

Turkestan, Korolkow.

I have indicated above the differences between *L. Korolkowii* and *L. Xylosteum* and *L. Tatarica* v. *puberula*, and need not repeat them. The typical *L. Tatarica*, L., is, of course, still more distinct in its being perfectly glabrous in all its parts. On the other hand, *L. Korolkowii* is very probably identical with the plant which was described by H. Zabel under the name of *Lonicera floribunda* Boiss. et Buhse in *Gartenflora*, 1889, p. 525, and figured by A. Rehder in *Gartenflora*, 1893, p. 103. Zabel's description especially fits *L. Korolkowii*, as represented by the specimens grown in the Arboretum of Harvard University. Rehder quotes Zabel's article and evidently intends to represent the same plant by his figure, and the only difference I find in comparing this with the specimens from which my description of *L. Korolkowii* was drawn, is that the corolla lobes are rather broader and the corolla alto-

gether a trifle shorter in the former. But this may certainly be considered as insignificant, and we may safely assume the identity of *L. Korolkowii* and *L. floribunda* of Zabel and of Rehder. But Zabel as well as Rehder, and evidently also Dippel in "Handbuch der Laubholzkunde," were mistaken in referring this plant, which was introduced from Turkestan through the Botanic Garden at St. Petersburg, to *L. floribunda*, Boiss. et Buhse. Zabel, who first made this suggestion, states himself that he had not seen any authentic specimen of *L. floribunda*, Boiss. et Buhse, but had to rely on the plate, published in "Boissier und Buhse Aufzählung der in Transkaukasien und Persien gesammelte Pflanzen," p. 107, t. 8. Buhse collected *L. floribunda* in two localities in the province of Mazanderan, on the Caspian Sea, at Warahusol and at Radkan, the latter south-east of Asterabad, in June and July respectively of 1848, both times in fruit only. From these specimens the original description and the figure were drawn. Ten years later the same plant was collected by Dr. Bunge early in March and a few miles northwest of Radkan, at Alfresh, not far from the lagoon of Asterabad. His specimens were in blossom, and it was from them that Boissier added the description of the flower in the "Flora Orientalis." One of Bunge's specimens is preserved in the Kew Herbarium. It is quite different from what was described and figured by Zabel and Rehder respectively under the name of *L. floribunda*, and approaches, in fact, so very much *L. Tatarica* that it is not easily distinguished. From *L. Korolkowii* it differs in the leaves, which are more rounded and almost truncate at the base, and hairy only beneath along the midrib, in the glabrous bracts, bracteoles and calyx lobes, which are quite those of typical *L. Tatarica*, and in the shorter corolla with broader lobes and a more pronounced gibbosity at the base of the tube. Rehder quotes also *L. Tatarica*, *L. B. micrantha*, Trautv., *L. micrantha*, Regel, as a synonym of his *L. floribunda*. If that be the case, the species described here would not be new. I have not seen authentic specimens of *L. micrantha*, Reg., but the descriptions of this plant by Trautvetter, as well as by Regel, and the description and figure of it in Dippel's "Handbuch der Laubholzkunde," pp. 232, 233, represent a plant with flowers only half the size of those of *L. Tatarica* (vig. 3-3½ lin., while they are 6-7 lin. in *L. Korolkowii*).

O. Stapf.

Foreign Correspondence.

London Letter.

ACACIA BAILEYANA.—This is a distinct and beautiful species which has recently been introduced into English gardens by means of seeds sent by Baron Sir F. von Mueller, the eminent Australian botanist. There are several good bushes of it in the Kew collection, and it is also grown in the Cambridge Botanic Garden, where it has lately flowered. It is of close, bushy habit, with stiff twiggy branches, thickly clothed with short, bipinnate, short-stalked leaves, as glaucous as those of *A. dealbata*, and with remarkably large glandules on the midrib. The flowers are in small-stalked, spherical heads, deep yellow, fragrant, and produced in large, elegant panicles on the ends of the branches. In Australia this species is said to form a small tree, fifteen feet high, of particularly graceful aspect, the gray bark of the trunk and branches and the silvery hue of the leaves being an excellent foil to the numerous panicles of golden yellow flowers. I have had a spray of flowers in water a week, and they are still fresh.

GRADERIA SUBINTEGRA.—This is a new Scrophulariadi which has lately been found in south Africa. Seeds are now offered by Mr. W. Nelson, a nurseryman in Johannesburg, who describes it as "a very handsome and uncommon-looking plant—a trailer, herbaceous, three inches high, producing Gloxinia-like pink flowers, with lighter shade in the interior of the flower." A botanical description by Dr. Masters and an excellent figure of the plant are published in the *Gardeners' Chronicle* for December 30th. From these it is clear that this *Graderia* is a beautiful little plant, with an erect spike six inches long, closely packed with Pentstemon-like flowers, and very attractive in appearance at any rate. There is, however, the suspicion that this plant is one of many very beautiful Scrophulariads found in south Africa which have never, so far, been successfully cultivated because of their semi-parasitical habit. Such plants

are the *Harveyas*, *Gerardias*, *Strigas*, *Buttonias* and *Cyniums*, which, together with *Graderia*, belong to the tribe *Gerardiæ*, the members of which are, as a rule, more or less parasitical on the roots of other plants. We have tried most of the plants here mentioned at Kew, and still possess plants of *Buttonia* and *Cynium*; but, although we manage to keep them alive, they do no good, and probably never will, until we get the host-plant to grow them on. Perhaps Mr. Nelson can supply the information which will enable us to grow the *Graderia* with success.

PORONA PANICULATA.—English gardening papers are recommending "*Porona paniculata*" on the strength of a paragraph which appeared recently in an American paper.

of dazzling white patches resembling snow patches in the jungle."

NEUWIEDIA LINDLEY.—This is an Orchid with flowers of very exceptional structure. The most marked peculiarity of *Orchidaceæ* is the consolidation of the stamens and pistil into one mass, called the column, and the suppression of two or one of the three anthers. But in *Neuwiedia* the stamens are perfect, quite separate, and they surround the stigma, which is as simple as that of a Lily. There is a plant of the above species in flower in the tropical Orchid-house at Kew. It was imported from Penang five years ago and is now a tuft of *Curculigo*-like leaves a foot long, with a central erect spike two feet high, half of it clothed



Fig. 4.—*Lonicera Korolkowii*.—See page 34.

I suspect *Porona* is meant, there being no such genus as *Porona*. *P. paniculata* is one of nine species of a genus of *Convolvulaceæ*. They are all natives of the tropics of Asia, *P. paniculata* being common in the jungles of India. It is cultivated in botanical collections in England, where it grows freely in a moist stove and produces, somewhat sparingly, large-branched panicles of small, dull white flowers. It would be attractive in the mass and probably is a useful garden-plant in countries where it can be grown out-of-doors. There is, however, a better species for the garden in *P. racemosa*, which is grown at Kew, and which is known as the Snow Creeper in India, where, according to Mr. C. B. Clarke, it is "a most beautiful plant, the masses

with yellow flowers, each an inch long and subtended by a narrow green bract. The sepals and petals are as unlike the ordinary Orchid as are the other parts of the flower, being equal and similar, free, with the merest suggestion of a lip in one of the petals. Imagine a flower of *Lachenalia* perched on the top of a three-sided ovary, and with three instead of six stamens, and one has a good idea of the flower of this extraordinary Orchid.

HARDY ORNAMENTAL FLOWERING TREES AND SHRUBS.—This is the title of a little book prepared by Mr. A. D. Webster, a forester, and author of several other little gardening works. It is intended chiefly as a guide to horticulturists in the United Kingdom, the term hardy being applied to

all trees and shrubs that thrive in the open air in some part or other of the British Islands. Mr. Webster has not attempted to describe the plants he enumerates beyond stating that they have large or small flowers of a certain color. Nor has he gone into details in cultural directions. His book may be recommended, as it contains the names and a little information about a great many plants which are not generally grown in the open air in England. It will also be of some service to American horticulturists, as it gives a good idea of the extent and variety of the material available in this country for the outdoor garden.

A CHAT ABOUT ORCHIDS.—The author of a book bearing this title, and recently published by Messrs. Chapman & Hall, is Mr. Frederick Boyle, a literary gentleman who for some years has taken an enthusiastic interest in garden Orchids, cultivating, chiefly with his own hands, I believe, a nice little collection of them in several small greenhouses in his garden at Croydon. The book is made up of articles contributed by Mr. Boyle to English periodicals, and written, as he says, to show that the delight of growing Orchids may be enjoyed by persons of very modest fortune and possessed of an ordinary amount of gardening skill. Professional cultivators will, no doubt, be tickled by Mr. Boyle's optimism, as shown in the following passage: "For one shilling the poor man can buy a manual which will teach him what species can be easily grown, and most of the things necessary for him to understand besides. An expenditure of five pounds will set him up for life and beyond, since Orchids are immortal. Nothing else is needed, save intelligence." Mr. Boyle has had considerable experience in writing to catch the public eye, and, no doubt, he has felt bound to use strong colors if he is to succeed in turning every householder with a "bit of glass" into an Orchid-fancier. Chapters on "My Gardening," "Orchid Sales," "An Orchid Farm," "The Lost Orchid" are pleasant and suggestive reading, as also are those on the different classes of Orchids into which they are divided for cultural purposes. From a professional standpoint, the last chapter in the book, which treats on "Hybridizing," is the most interesting and useful. There are also eight beautifully executed little colored plates, representing as many choice Orchids. The book is one for the drawing-room table, and exactly the kind of treatise to recommend to any one wishing to know something about Orchids, and what is sometimes called the Orchid fever.

MR. RICHARD SPRUCE, the Brazilian traveler-botanist, who collected for Kew forty-five years ago, died this week at the age of sixty-six years. A Yorkshireman, the son of a schoolmaster, with plenty of what his countrymen call "go" in him, he won the interest of Sir William Hooker, Humboldt and others, and was sent, when only twenty-one years of age, to explore the River Amazon in the interest of commerce as well as science, a mission which extended over fifteen years. He crossed the continent from the Atlantic to the Pacific, collecting 7,000 species of plants, many of which were new to science, and some have since proved valuable to commerce. His papers on the Palms of the Amazons, published in the *Journal of the Linnean Society*, are among the most valuable of his contributions to botanical literature. He retired on a Government pension some years ago, and devoted his leisure time to a study of Mosses, Liverworts, etc.

London.

W. Watson.

Cultural Department.

Spraying Fruit-trees for Fungoid Diseases.

THIS subject is one so important to every one who attempts to grow fruit, that hardly too much can be written about it, and we, therefore, add to what was said last week some of the essential points in an address delivered before the New Jersey State Horticultural Society by Dr. Charles Parry:

Many fruit-growers use the Bordeaux mixture regularly on their Apple as well as Pear trees for fungoid diseases, and it

is, no doubt, beneficial, not only in securing finer fruit the year it is used, but, by keeping the leaves healthy and hanging late on the trees, more fruit-buds are formed and a heavier crop of fruit is secured the following year. There are some plant-diseases, however, that seem proof against the Bordeaux mixture—for instance, the mildew of the Peas. When sown early these escape the mildew and mature a good crop, but it is well known that those sown in May and June are of very little account. Experiments tried the past season showed that vines sprayed with the Bordeaux mixture once a week suffered quite as much as those not treated. Perhaps one reason of this is that the Pea-leaf is so smooth that the mixture will not stick to it, but rolls off and leaves the vine as dry as before the application. The effect on Gooseberry-foliage was not so good as we should expect; three applications were made a week apart, but the foliage remained on the treated vines but very little longer than on the untreated. The effect on Lima Beans and Potatoes was good, keeping the foliage healthy and increasing the crop. Experiments on Sweet-potatoes to prevent the black-rot seemed to do good, but further work is necessary to secure positive results. But, whatever the effect of the Bordeaux mixture upon other crops, there is no question that it has a magical effect upon the Grape. So uncertain had the grape crop become in some parts of New Jersey from the rot and mildew that many growers grubbed out their vineyards, but the mixture has so changed the state of affairs that the grape crop is now one of the most certain and reliable grown, and many growers who grubbed out their vines a few years ago are now planting anew.

The question of nozzles is important, and it is worthy of note that the Vermorel, which was one of the first introduced, has not yet been surpassed, for grapes at least. In economy of material, in evenness of distribution and in simplicity of construction it is very hard to improve upon it. For spraying trees there are several good nozzles, the McGowan being one of the best. This nozzle has the important feature of freeing itself of small obstructions that would clog other nozzles.

Our improved method of making the Bordeaux mixture consists of using prussiate of potash to determine the amount of lime necessary to neutralize the sulphate of copper, instead of weighing a small amount of lime and slacking it each time. It is difficult in some places to get small quantities of fresh lime, and a large quantity, if not used soon, spoils. By keeping on hand a bottle of the solution of prussiate of potash, costing five or ten cents, a bushel or more of lime can be slacked at a time. Then, after the sulphate of copper is dissolved, add the milk of lime until the test shows there is sufficient, then add enough water to make the required quantity, say about eight gallons for each pound of sulphate of copper. A few drops of the prussiate of potash in the sulphate of copper solution give a deep brown stain; as the lime is added this stain shows less and less, and when it no longer appears there is enough lime added. The old plan of dissolving the sulphate of copper was to use hot water or to put the lumps in the bottom of a tub or barrel and stir them. By this plan the water on the bottom became saturated with the copper salt until it could dissolve no more, and being heavier than the pure water it remained on the bottom and prevented further solution, so that it took days sometimes to dissolve large lumps of the copper salt. The proper plan is to place the lumps of sulphate of copper in a grape basket and suspend it in the water as near the top as possible. As the water takes up the salt it becomes heavier and sinks, while a fresh supply surrounds the salt. Thus a constant circulation is maintained, and it is surprising how quickly the lumps are dissolved.

The effects of the Bordeaux mixture were strikingly shown the past season in a large orchard of Bartlett Pear-trees affected with leaf-blight. This orchard blooms freely every spring, but persistently fails to bear fruit. A series of experiments upon the orchard with various fertilizers, running from one-half ton to three tons per acre, was interesting, but was not effectual in producing fruit. The leaves in this orchard generally fall in July and August from leaf-blight. To counteract this, a series of plots were sprayed with different mixtures, a different number of times, from four to six, and at different seasons of the year from April to August. Without going into detail, it is sufficient to say, by the last of September there was not a leaf to be seen in the orchard, except on the sprayed trees. Those that had been sprayed several times, and especially those which had been treated for two years, were as rank and green with abundant foliage as they had been in the spring. It could be plainly seen, on the tall trees, how far the spray had reached; below the line the foliage was green and abundant, above that line the trees were as bare of leaves as in winter. Another noticeable feature was the difference in

the fruit-buds. On the unsprayed trees these were small, puny buds that could hardly be distinguished from leaf-buds. On the sprayed trees they were large and plump and gave every promise of abundant fruit. The trees sprayed in 1892 bore twice as much fruit in 1893 as the unsprayed trees did; while these same trees that have now been sprayed two years promise to do still better in 1894.

From a careful examination of the different plots, sprayed a different number of times and at different seasons of the year, we came to the conclusion that for that orchard two sprayings, one on June 1st and the other on June 15th, were for all practical purposes sufficient.

While it is not so necessary to spray the Bartlett Pear in neighboring orchards as it is in this one, there are nevertheless other varieties, such as Clairgeau, Flemish Beauty and Louise Bonne de Jersey, that are of little value without it, and are so much improved by it that the pears look like different varieties of fruit. Another point in favor of spraying the Bartlett is its effect in making the fruit hang longer on the tree, and as the late Bartletts sell the best, the crop will bring more money therefor.

The quince is another fruit that is greatly benefited by the Bordeaux mixture, and where it is applied regularly and systematically, year after year, this shy-bearing tree changes to a regular and abundant bearer of large-sized, handsome fruit, that colors up well and sells at the highest market price.

While farmers have been fortunate in securing good mixtures to combat plant-diseases and insect-enemies, and good pumps and nozzles to apply them with, they have not been so fortunate in getting machines to do the different kinds of spraying. While one machine will do good work in a potato-field, it will not answer in an orchard, while the machine that sprays the orchard will not suit the potato-field, and neither is suitable for Grape-vines, as they are not narrow enough to go between the rows. If the farmer has three machines, one for his potatoes, one for his orchard and another for his grapes, he still cannot spray Raspberries or Currants, because all three are too wide to go between them and too low to go over them, so that a fourth machine seems necessary for these crops. In addition, he needs a knapsack-sprayer, and this makes an expensive outfit. What is needed is a single machine so geared that it can be worked by one horse and can be adapted to do any of these different classes of work.

Roses.

PPRIVATE establishments often lack space and proper facilities for forcing Roses, but if a pit or cold frame can be provided in addition to the conservatory, it will be possible to cultivate a few Hybrid Perpetuals in pots at this season, and the plants may be stored in the frame until it is necessary to bring them into heat.

Strong home-grown plants, on their own roots, are preferable for this purpose, although some of the imported stock is quite satisfactory if the plants have been worked low enough to bring the union beneath the soil in potting. In this case there is a possibility of the stem sending out roots above the graft. Additional strength is thus gained, but this is impossible with long-shanked Roses, such as are frequently sent to American auction-houses by some European growers. It is, therefore, safer to use good home-grown stock, with the reasonable expectation of some good flowers in due season. These Roses, which are potted in five, six or eight inch pots, according to size, when received in the fall, should be stored in a cold frame as soon as freezing weather sets in, the wood being shortened back with a sharp knife or shears. The plants can be brought into heat as they are needed, and started into growth gradually. A thorough watering is the first requisite to start the roots and buds into active growth. A slow start gives the strongest growth and finest flowers, and for a few days the Roses may be kept beneath the stage at the coolest end of the house. As soon as the buds break away the plants should be given all the light possible. Frequent syringing, and just enough water at the roots, are necessary, and it is essential to have as many roots as possible. As soon as the flower-buds show, fertilizers should be applied in the form of top-dressing or liquid-manure.

The plants should be started at a temperature of forty-five degrees, and the heat should be gradually increased by moving them to warmer parts of the house until a temperature of fifty-five to fifty-eight degrees is reached. In this way flowers may be grown of much better texture, and, consequently, more lasting, than those grown in a higher temperature.

The varieties that can be recommended for forcing in a pri-

vate establishment include those most largely forced in commercial establishments, as Mrs. John Laing, Ulrich Brunner, Magna Charta, Anna de Diesbach, Madame Gabrielle Luizet, and, in addition, some that are not so widely grown, among which are Marie Baumann, Captain Christy, Countess of Oxford, Baroness Rothschild and Alfred de Rougemont, and, to round out a good dozen sorts, General Jacqueminot and Coquette des Blanchés. If the conservatory is large enough to permit it, some use may also be made of pillar Roses, which may be planted out in a prepared bed at the foot of a pillar, and only trained enough to prevent their interference with other plants and to better display their own natural beauties. Two of the best sorts for this purpose are Lamarque and Maréchal Niel, and, though both are croppers, they produce such a wealth of bloom under the proper conditions that the flowering period is quite extended, and Lamarque has such bright and handsome foliage that it is ornamental when out of flower. But, to secure an abundance of the best flowers, these sorts should have a period of rest and then be started into growth, much the same as Grape-vines are started under glass.

Holmesburg, Pa.

W. H. Taplin.

Greenhouse Climbers.

PLANTS of scandent habit are a great ornament to the greenhouse, and they are also useful for decoration in many ways. They should, of course, be carefully selected, for some are too vigorous for any but large structures, others are desirable for their neat and unobtrusive habit. The most important point at starting is the temperature of the house where the plants are to grow. A warm house with a minimum temperature of, say, sixty degrees will be a congenial home for any of the tropical climbers, even if it becomes a few degrees colder on very cold nights—indeed, it is better to let the house be a little cooler during severe weather than to attempt to maintain a greater heat with an arid atmosphere which always does more to promote the health of insects than that of plants. Climbers generally do best when planted out, but a free root-run is undesirable in certain cases, since it tends to an over-free growth that does not mature and will not flower freely. The failure of greenhouse climbers to flower freely may, in many cases, be traced to this cause, or to a lack of sun and air in summer and fall.

The most beautiful of climbing plants are, perhaps, the Dipladenias; they do not grow so rapidly as some others, but they flower better than most of them; the plants are decorative for at least six months of the year. The flowers can be used for table-decoration, and the delicate shades of pink and rose are most attractive, and they last long after being cut. The Dipladenias are natives of Brazil and will stand full exposure to the sun in summer; our plants grow and flower most satisfactorily at the end of the Rose-house, where the temperature is exactly what they require, both in winter and summer. They are not strong-rooted plants, and while they may do fairly well in a soil composed principally of loam, they much prefer being potted in rough fern-root or peat, made porous by liberal additions of sand and broken pots. This may seem a very poor compost to give the best returns, but if a healthy root-action is secured, stimulants can be applied when of most benefit to the plants, that is, during active growth and the flowering period. The best kinds we have are *D. Brearilyana*, *D. amabilis*, *D. profusa* and *D. Houtteana*; all of them have rose-colored flowers, and some turn to the richest crimson before fading. The plants rest in the winter, and in early spring they may be cut back, repotted and started again. The Mealy-bug is a great pest if allowed to get established, but a free use of the hose in the growing season is a sure cure for this pest, if applied with force and frequency.

Bougainvillea glabra is another free-flowering plant, and is not so often seen as it deserves. It is usually a summer bloomer, but by cutting it back in September we make sure of a good supply of its beautiful pink bracts in midwinter. The *Bougainvillea* requires root-restriction to induce it to flower abundantly; it makes too vigorous a growth if left to run as it will, and we, therefore, plant it out in a bench and put in well-cemented brick partitions. Like the *Poinsettia*, the bracts are the conspicuous part of the inflorescence, though to the casual observer these often pass for the flower proper. The *Bougainvilleas* are also Brazilian, but from the common name often given them, "Chinese paper-flowers," one would naturally suppose they were of eastern origin, more especially as the plant has spread with the advance of horticulture, so that it is more often seen in the far east than in the western hemisphere, and travelers agree in praising its beauties as seen in India. There is another species called *B. spectabilis*, which

has the best color of the two, but as it flowers on the growth made the preceding season, and requires a great deal of head-room, it is seldom seen. It flowers well every year at Wellesley, in the gardens of Mr. H. H. Hunnewell, where the plant occupies a section of a large span-roofed house. Those who possess a large house would do well to plant both these Bougainvilleas, as no insect pests, so far as I know, are to be feared.

Yet another climber from Brazil is *Stigmaphyllon ciliatum*, a plant with lovely yellow flowers, which at once suggest those of an *Oncidium*, so nearly alike are they in shape and color. The plant itself is of slender growth, and may be grown to advantage in a greenhouse in summer without overshadowing the other occupants. It flowers on the young shoots as they grow during summer. In the fall the plant should be cut back nearly to the soil-level, from which it will start again with the return of longer days and more sunshine in spring. The *Stigmaphyllon* requires a frequent syringing in hot weather, owing to its liability to attacks by red spiders. A free root-run is preferable, though I have had good specimens in pots, although the growth will not be so vigorous, nor will it flower so freely.

The *Allamandas* are well-known plants in gardens, especially *A. Hendersonii* and the larger-flowered species, but there is one very old kind called *A. grandiflora*, which has shoots no thicker than a goose-quill and bears flowers as large as the better-known kinds. I would be glad to meet with it again, if still in cultivation here. Owing to its slender growth, it is usually grafted on *A. nerifolia*, an easy operation, and one which adds vigor and hardiness at the same time. *A. nerifolia* will thrive in a temperature ten degrees cooler than the other species; it is of shrubby habit, and the flowers are not so large as those of others.

Most of the Passion-flowers are too vigorous for planting out in the greenhouse, they so soon overrun and make the house too dark for the other things; there is, however, one species not often seen, called *P. Raddiana*, better known as *P. kermesina*, one of the most beautiful, if not the best, of the genus. In this species the growth is twining and slender, and the flowers, as the older name suggests, are of the richest crimson, and borne in great profusion all summer. It is hard to account for the rarity of this Passion-flower in cultivation, but it can be accommodated in the smallest glass house. The corolla eventually reflexes with maturity and resembles a gigantic *Cyclamen* or the *Gloriosa superba*. Another good *Passiflora*, *P. racemosa*, is sometimes seen, but not frequently, owing to the difficulty of propagating it. This is the *P. princeps* of some catalogues, and it is a prince among its fellows in every respect, while the racemose character gave rise to its prior name; the racemes continue to flower all the season, and as the buds, as well as the expanded blossoms, are bright scarlet, it is most useful for decorating. The best way to propagate it is to root from cuttings one of the common sorts, such as *P. edulis* or *P. Pfordtii*, and then graft *P. racemosa* on the stocks thus secured. Passion-flowers are easily grafted at this time of year if a closed case is at hand in a warm-house, the operation being always interesting to the owner, especially as the plant develops into full flower and beauty. Grafting has been stigmatized as "a makeshift and a fraud," and with good reason in certain cases, but if the operator would always try and keep the union as near the soil-level as possible, we should not hear so many complaints, for the plant could be on its own roots the same season if the union, when complete, were buried under the soil. Plants are never slow to take advantage of a little encouragement given in this way.

It is hardly worth while to urge the more extended use of this class of plants, and yet many greenhouses fail to reach their highest possible attractiveness on account of their neglect. The bare frame and mechanism of the interior of a tropical greenhouse is often an eyesore; but with trailing plants, such as *Cissus*, *Panicum*, *Tradescantia* and *Lycopodiums*, planted so as to drape and fringe the edges of the benches, with *Pothos*, *Ficus repens* and others to climb up the dividing walls and partitions, and a few choice climbers garlanding the roof, a scene of truly tropical beauty is easily reproduced.

Boston.

Plantman.

Iris Palestina, which is now in flower, is an interesting plant, but not of much garden value, as the light yellow flowers are rather lacking in color. It can only be flowered in this climate in a cool house, where there is difficulty in ripening the bulbs. It is a native of Palestine and the Sinai Peninsula, and is a bulbous plant of the sub-genus *Juno*, the better-known forms of which are *I. Caucasica* and *I. alata*. The latter, by the way, is now in striking contrast as a first-rate plant, with very attractive flowers. *I. Palestina* is dwarf, with pointed sickle-shaped

leaves, in two rows, between which the flower nestles. The flower is of light yellow, about the color of ordinary forms of *I. Caucasica*, though it varies somewhat in tones from opaque greenish yellow to bluish tints. The standards are minute. The blade of the falls is marked with blue or violet veins. The ridge of the fall is orange, and the claw is dotted with deep violet spots. The flower is fragrant, with less odor than that of *I. alata*. As far as my brief experience goes, this *Iris* and *I. Varlini*, which is also from Palestine, are the least satisfactory of the winter-flowering *Irises*. The latter species flowered last winter in the open, but quickly succumbed to the elements, and the bulbs seem to have disappeared. These are quite in contrast with the *Irises* of the *Reticulata* section, whose flowers, appearing a little later, will survive as much hardship as a *Snowdrop*. The first of these, *I. Histro*, has its leaves well up now, and flower-buds are showing in the open, quite unprotected. The severe weather of a very changeable winter has had no effect on its foliage or on any part of the plant, except to scorch the tips of the stems slightly.

Elizabeth, N. J.

J. N. G.

Correspondence.

Rust of Carnations.

To the Editor of GARDEN AND FOREST:

Sir,—Allow me to call attention to a statement of your correspondent, Mr. T. D. Hatfield, which might lead to misconception. Writing of Carnations, in your issue of January 10th, p. 17, Mr. Hatfield says: "Some growers date the appearance of the disease (Carnation rust) in their establishments to buying infected plants, and while this, no doubt, has been the means of spreading it, it has been generally noted hereabout that the disease appeared first in the open ground; and on examining many weeds, and particularly grasses in pastures, abundance of rust could be found; in some cases quite near to the Carnation patch." Doubtless these latter statements regarding the occurrence of rust-fungi (*Uredineæ*) on weeds and grasses are quite true, but, so far as we know, those species of rusts have nothing to do with the Carnation rust. The latter is due to a distinct species of fungus known as *Uromyces caryophyllinus*, and, so far as we know, is limited to Carnations. There is nothing whatever to indicate that this fungus has any genetic connection with, or can be produced by, those species which occur on "many weeds, and particularly grasses," nor that Carnations are exposed to attack through proximity to those species.

The common garden Pink, *Dianthus barbatus*, the near relative of the Carnation, is subject to the attacks of a rust-fungus, *Puccinia Arenariæ*, but, again, this fungus is quite distinct from the species which attacks Carnations. *Puccinia Arenariæ* is known to attack several weeds, such as *Cerastium*, *Stellaria*, etc., as well as *Dianthus barbatus*, but that it can be transferred to Carnations is out of the question. The rust of Carnations is, to a large degree, undoubtedly, propagated with the slips. The vegetative portion of the fungus, or mycelium, is perennial in the stalks and leaves of the plant attacked. There it may remain concealed for some time before it makes its presence evident by the production of the reproductive bodies or spores, which, from their color, give the name of rust to this group of fungi. The cutting of slips containing such concealed fungous threads, is not only a probable occurrence, but one which is practically unavoidable if there has been rust upon the plants; shortly after such slips are transferred to the open ground the fungus concealed within them develops its spores, and by means of the latter the fungus rapidly spreads from plant to plant. Of course, the most reasonable method of dealing with the pest is, as Mr. Hatfield remarks, to plant only rust-proof varieties. If, however, untested varieties are planted, care should be taken to secure sound and clean slips, and after these are rooted they should be sprayed with Bordeaux mixture. Constant watchfulness must be exercised, and slips which show the first symptom of rust must be promptly rooted up and burned. With this attention and care there should be little difficulty in contending successfully with the disease, even though there be weeds and grasses affected with another rust in the neighborhood.

New Haven.

W. C. Sturges.

Forest-lands for Investment.

To the Editor of GARDEN AND FOREST:

Sir,—I observe in an editorial article of your issue for November 1st, that Mr. Fernow is quoted as recommending forest-lands under regular management for long investments

This is an idea which I have long held. Many circumstances seem to me to co-operate in this direction. These are:

(1) The low figure at which even untouched virgin forest-land can be bought in certain places; (2) the steadily advancing price of timber; (3) the diminishing rate of interest; (4) the rise in the price of labor, which will be intensified by the restrictions placed upon immigration; (5) the growing desire to establish family property on a permanent basis.

The increasing price of labor has already begun to make agriculture difficult, and it will become more so, except on virgin or exceedingly fertile soils. Forests require much less labor.

All these facts tend to make it not unlikely that proprietors in some parts of the United States may, eventually, invest their money in forest-land, with a view, under regular management, of getting a moderate annual income, of steadily increasing the capital value of their estates and of eventually getting a large annual income. It seems to me that the man who first succeeds in setting the example in this respect, on a sufficiently large scale, will be the leader in what is destined to be a great movement.

Bonn, Germany.

Dietrich Brandis.

Meetings of Societies.

The Nebraska State Horticultural Society.

THE twenty-fifth annual meeting of the Nebraska State Horticultural Society was devoted almost entirely to a discussion of the various phases of Apple-culture. In the opening paper on the "Botany of the Apple-tree," by Dr. Charles E. Bessey, it was stated that all of the varieties in cultivation, to the number of 4,000 or 5,000, have been produced from *Pyrus sylvestris* and the two botanical varieties of *P. Malus*. *P. prunifolia* has produced the Transcendent and Hyslop Crabs, and *P. baccata*, the older small Crab-apple of the garden. The Soulard Crab is the offspring of the American species, *P. Iowensis*. Some of the species of the genus are of value only as ornamental trees, but several of them are even more promising in the wild state than the wild forms from which our common varieties have been derived. These offer a good field for experiment in determining their future possibilities. *P. rivularis*, of the Pacific coast, is especially promising in this respect. The fruit is about one inch in diameter in its wild state and possessed of a pleasant flavor. Although so widely distributed over the globe, no Apples are indigenous south of the equator.

Under the heading of the Tree in Health, attention was called to the matter of evaporation from the leaves, and emphasis laid on the fact that the escape of moisture from the leaf is purely accidental, and not a physiological function, as so commonly taught. The skin of the leaf is designed to retain moisture, just as the oiled-paper which a florist wraps around plants retains their moisture. The stomata, or breathing-pores, of the leaf are for the purpose of absorbing gases from the air. In doing this they allow the escape of moisture simply because the leaf can't help it.

Under the discussion of the Tree Diseased, the term disease was used in a broad sense and made to include starvation and other enfeebled conditions; as well as the effects of parasitic fungi. A tree may be just as truly starved in a fertile soil which is too hard for the roots to penetrate, or which is too dry, as in a soil deficient in plant-food. Too wet a soil, where the roots are submerged in water, may also induce starvation. Besides unfavorable habitat, unfavorable atmospheric conditions are also a cause of disease. For example, the severe droughts of the plains often injure trees. The exposed trunks may reach a dangerously high temperature in hot summer days. The extreme cold of winter is also doubtless injurious in many cases. Quick alternations are usually fatal. Sun-scald is probably due to this. Mechanical injuries are a third cause. Wounds, whether made purposely or otherwise, often afford means of access to bacteria and fungi. Every wound is a serious menace to the life of a tree. A tree may even perish from starvation, owing to a loss of leaves from insect-attack.

Parasitic fungi may cause: (1) Diseases of roots. The disease known as "root-rot," which is often quite serious in the west, is probably due to some of the toadstool fungi.

(2) Diseases of the trunk. One of the most serious of these is "rotten heart," probably due to one of the ear-shaped fungi found growing on the side of tree-trunks. This fact is not fully demonstrated, but the injury corresponds to the nature of that fungus, and it is known to cause just such injury in other parts of the world. The speaker had also found

threads which looked like those of this particular fungus. The disease known as "black heart" was also mentioned with the statement that the cause is wholly unknown. Sun-scald, although so common, is not fully understood.

(3) Diseases of branches and twigs. The most important of these is blight, which affects all parts of the tree, including trunk, twigs and flowers.

(4) Diseases of leaves. These include powdery mildew, scab, rust and brown spot, a disease known to be very destructive in Virginia.

In a short paper on Apple-seedlings, D. U. Reed mentioned the importance of sowing the seed at a uniform depth, since a seedling will grow only to a given height and then perish if not above ground. He sows one inch deep, and prefers to sow in February or March in this section, sowing the seed dry, just as it comes from the seed-houses. If it is to be sown later it should be first soaked, then dried enough to sow with a drill. Especial emphasis was placed on the importance of frequent surface-cultivation to hold and accumulate moisture.

A paper on "Experimental Orchardling in Nebraska," by Peter Youngers, Jr., showed forcibly the unprofitableness of planting many varieties. Of sixty varieties planted nineteen years ago the majority have failed, principally from blight. He now keeps his experimental orchard away from his main orchard in order to avoid spreading this disease. Forty Ben Davis trees have averaged ten bushels per tree four times since planting. He would not recommend over ten varieties for general planting. These are Early Harvest, Duchess and Cole's Quince for summer, Wealthy and Snow for fall, and Ben Davis, Winesap, Grimes's Golden, Missouri Pippin and Janet for winter. The Early Harvest does not bear young, but it is hardy and improves with age.

The subject of propagation was treated by G. J. Carpenter, who recommended root-grafts with a two-inch piece of root and a six-inch cion, planted seven inches deep, in order to throw the tree on its own roots. Budded trees are objectionable on account of throwing up many sprouts; they are not so good as root-grafts in the west. Practically, no whole root-grafts are used. Several years' experimenting has shown no difference between collar-grafts, middle cuts and low cuts. The past season, the best growth was from the lower cuts of No. 2 seedlings. Ben Davis, Gros Pomier and Whitney are admirable stocks for this region. Gros Pomier, in regions where it matures early, will hasten the maturity of the variety grafted on it.

On the subject of "Commercial Orchardling," President Stephens stated that the key to success lay in cultivation. He believes that we have never secured all the possible advantage of cultivation in conserving moisture. Tillage should be repeated every ten days at least from May 15th to August 15th. Cultivation very nearly takes the place of irrigation in parts of California. This is also true in Nebraska in nursery work, and is no reason why it may not also hold true in fruit-growing. In the discussion of this paper, the significant fact was brought out that in collecting fruit for the Chicago Exhibition it was only from those men who were giving thorough cultivation that any apples could be obtained. Some prefer to keep cultivating as long as the weeds grow. Mr. Stephens has gathered 1,000 bushels per acre several times. His practice is to plant close, and thin out after the trees have borne several crops.

Professor Sweezy, of Crete, presented an interesting paper showing the relation between the apple crop and the rainfall during a number of years past. His estimates of the apple crop of various years were obtained from a number of growers. Charts, with lines representing the abundance of a crop in the different years, showed a very close resemblance to the lines representing the annual rainfall of those years. If only the total rainfall during the growing season, from May 1st to September 1st, is considered, the correlation is almost perfect. While other causes must influence the crop to a certain extent, the rainfall appears to be the most important factor in south-eastern Nebraska. It demonstrates forcibly the necessity of conserving all the moisture possible by thorough and persistent cultivation. The statement is frequently made that the rainfall of the state is increasing with the increase of cultivation and timber-planting, but the weather records do not show this to be a fact.

Mr. I. N. Leonard, of Lincoln, gave a report of progress on an interesting method of tree-planting first suggested by him. Much of the soil about Lincoln, and in some other parts of the state, is underlaid with a hard pan of clay so dense that the roots of trees will not penetrate it. Mr. Leonard's method is to dig large holes four to six feet deep, or through this stratum of clay, if possible, then to fill these holes with good surface-soil, and there plant his trees. Thus far this method has given

him trees free from blight and sun-scald, but the experiment has only been in progress about two years. He now finds that in a field of four acres, in which 150 of these holes have been dug, the underlying clay is very much softened, so that holes can be dug much more easily than formerly. This he considers to be due to the action of the water which has thus been allowed to permeate through and beneath this hard stratum.

Notes.

Although Nebraska stands the lowest among the prairie states in the proportion of woodland to farmland, yet the forestry exhibit at Chicago last year demonstrated the capacity of the state for growing timber. The largest specimens of White Elm, Hackberry, White Cottonwood, White Maple, Box Alder and planted Catalpa were shown by this state, and larger specimens of planted timber-trees than those from any other state.

Colonel Philo Hersey, at a recent convention of California fruit-growers in San Francisco, stated that enough Prune-trees are now planted in that state to produce, after a few years, 100,000,000 pounds of cured prunes annually. An immediate question in relation to prunes is, whether they shall be graded according to size alone, or as is largely the practice in the Santa Clara valley, according to their saccharine contents. The richest prunes, from lack of irrigation and other causes, are often smaller than the insipid fruit grown on wet lands, or under other conditions favoring size at the expense of quality.

The *Rural New Yorker* has gathered a number of opinions concerning the Horticultural Lima Bean from various sources, and the testimony seems to be that it is earlier than other Pole Beans; that it is hardy and productive. It can be used as a snap bean, but it is neither as good nor as early as some of the bush varieties for this purpose, but as a green shell-bean it is of excellent quality, although it has the fault of a dark disagreeable color when cooked. The Bean originated with Mr. J. H. Hodges, of Vermont, in 1885, and it is supposed to be a cross between the Challenge Lima and the old Horticultural Pole Bean.

The January number of the *Botanical Magazine*, which begins the one hundred and twentieth volume of this work, contains a figure (t. 7335) of the north China *Prunus humilis*, which was first described as long ago as 1733 by a French missionary in China, Dominicus Parnenin, under the name of Oolana, the Mongolian and Manchurian name of this plant. *Prunus humilis* is an old inhabitant of the Arnold Arboretum, having been first raised there from seed sent from Pekin by Dr. Bretschneider. Sir Joseph Hooker retains Bunge's name of *Prunus humilis*, while pointing out the fact that it had been changed by Walpers to *Prunus Bungei* on account of an earlier *Cerasus humilis*, a native of Sardinia, and now thought to be a variety of *Prunus prostrata*. *Prunus humilis*, or Bungei, is a dwarf and exceedingly hardy shrub that blooms profusely every spring and bears abundant crops of bright red fruit, rather less than half an inch in diameter.

Since it has been found out that the peculiar muck-soil of certain swamp-lands is especially adapted to the cultivation of Celery, an increased acreage of such land is devoted every year to raising that vegetable for market, and in some places; especially in Michigan, its cultivation has become a very large industry. When this plant was first introduced, and raised only here and there, few insects attacked it, but many of our native insects have acquired a liking for it, so that the species which attack Celery have rapidly increased in number and in the severity of their attacks. Bulletin 102 of the Agricultural Experiment Station of Michigan, which is devoted to these insects, will, therefore, be especially welcome to all commercial growers as well as the owners of private gardens. A very complete history of the various insects which have been found to injure Celery, together with the most available methods of preventing their ravages, are here set forth in about thirty pages of carefully illustrated text.

The season's shipments of raisins from California up to the 1st of January amounted to the enormous total of 64,000,000 pounds, which, estimated on the basis of 20,000 pounds to a car, would show that 1,000 more car-loads were shipped last year than the year before, when the crop required 2,200 cars for removal. It is estimated that from 350 to 400 car-loads of raisins yet remain on the Pacific coast, where they are held for higher prices. The hopes of an increase of price are stimulated by the fact that there are very small supplies of foreign raisins now in the hands of importers here, and

they will hardly be imported in quantity at present prices. It may be added here that while the California Fruit Union reports a large increase of shipments of all kinds of fruit from California last year, the receipts were not so large as they were the year before. To show the great cost of handling fruit, it is stated that on sales amounting to \$2,046,404 the expenses for freight, refrigerator service and commission were \$1,127,497.

In December last (see GARDEN AND FOREST, vol. vi., p. 516) we gave an account of some experiments by Professor Lazenby at the Ohio State University, setting forth the advantages of applying water under the surface of the soil in forcing-houses and hot-beds, and of using a similar system of irrigation and drainage combined for the outdoor garden. Experiments in the same direction have been made in the West Virginia Agricultural Station, and the result is recorded in Bulletin No. 33. The practical conclusions are that, with good judgment on the part of the operator, sub-irrigation will be found preferable to watering on the surface. Some points gained by this system are that the soil does not become hardened on the surface, nor does it bake and dry out on the bottom; time and labor are both saved, less water is needed, and the soil can be worked at any time; good drainage is secured, and the soil is free to admit air, and therefore does not become sour or stagnant. In the West Virginia experiments Spinach matured earlier; Lettuce, Radishes, Tomatoes and Parsley were benefited; the plants attained more even size, and fungus diseases were not so prevalent.

Mr. Edwin Molyneux has published his annual analysis of the relative positions of the varieties of Chrysanthemums grown for exhibition in England, and it appears in the current issue of the *Journal of Horticulture*, the flowers being ranked according to the number of times they were shown at the exhibitions of the National Chrysanthemum Society for the last nine years. The first fact prominently brought out is that the Japanese varieties have grown much more rapidly in favor with exhibitors than have the incurved sorts. Of this latter class the old favorites still lead the list. The Empress of India is still number one, followed by the Queen of England, Lord Alcester, Golden Empress of India, with Madame Darier for the fifth, a variety which was not sent out until 1890. This new variety was shown oftener last year than any other of the incurved kinds, except Jeanne d'Arc, which stands sixth on the list, and is followed by the Golden Queen of England, Princess of Wales, Mrs. Violet Tomlin, Miss M. A. Haggas, Lord Wolsley and Alfred Salter. Old favorites in the Japanese section are more rare, and they seem to be more rapidly replaced by the newer kinds. The leading variety in this class is Vivian Morel, which was introduced as late as 1891, and was the sensational flower at the exhibition in the next year. The list continues in the following order: Edwin Molyneux, Avalanche, Sunflower, Etoile de Lyon, Florence Davis, William Tricker, Colonel W. B. Smith, W. H. Lincoln, Gloire du Rocher, Monsieur Bernard and Stanstead White.

The importations of bananas during December were unusually large, and this fruit then sold on the dock as low as twenty cents a bunch for No. 3 size. Only eight steamer-loads arrived during the first three weeks of this month, and with the market clear of old stock, bunches of the first grade sold as high as \$1.22 at the vessel's side, No. 3 bringing from forty to sixty cents a bunch. During the early part of January oranges were leaving Florida at the rate of 35,000 boxes a day, as many as 98,000 boxes coming to this city in one week. Prices have been so low as to net the growers only fifty cents a box. Desirable sizes of good Florida oranges are \$1.50 to \$1.75 a box at wholesale, and the best Navel oranges are but \$3.00. The first California oranges of this season reached New York last Friday. Bright Riverside Navel fruit of good quality is offered at wholesale at the same price as Florida oranges of the same grade. A number of car-loads of California oranges are in transit, so that this fruit will soon be fairly on the market. Among vegetables, lettuce of ordinary quality hardly brings enough to pay expenses, while the finest from Florida and Charleston is worth \$2.00 a basket, and the best Boston hot-house lettuce is seventy-five cents a dozen heads. Cauliflower from California, chicory from New Orleans, new beets from Florida and Bermuda, green peas, string beans and egg-plants from Florida, cucumbers from Key West, tomatoes from Havana and Florida, and kale, spinach and radishes from Norfolk are among the common offerings in the midwinter market of this city. A few strawberries, from California, of not the best quality, were seen here during the holidays, and within a few days past the first pickings of the new crop in Florida were sold here at \$2.50 a quart.

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A German View of Landscape-art in America.

IN an address at the December meeting of the Prussian Horticultural Society, with regard to his recent journey in the United States, Dr. Wittmack is reported to have rendered full justice to the efforts which had been made to give the Horticultural Department of the Chicago Fair the grandeur expected by the outside world. He mentioned in detail the names of the principal exhibitors, so numerous as regards America itself, although fewer than one might have expected as regards Europe, notwithstanding the fact that Germany was able to boast of having been represented by sixty horticultural establishments. With respect to the public gardens and parks which Dr. Wittmack had visited, his praises were unreserved. But the motive to which he attributed the excellence of these artistic creations seems so singular that one is tempted to question the correctness of the report. He does not credit it to that instinctive love of beauty and of nature which is especially strong in the Anglo-Saxon race, but finds its motive in that rigorous observance of the Sabbath which in many places deprives the American populace on Sundays of all forms of enjoyment except those which are practicable out-of-doors.

We need hardly say to our American readers that this is a mistaken view. Our parks and pleasure-grounds have almost always been established and designed with the needs of the poor, as well as of the rich, in view, and more detailed arrangements for their general accommodation and their sports have been provided here than has often been the case in European parks. Of course, too, it has always been understood that workmen and their families, here as in Europe, are able to enjoy every form of recreation more freely on Sundays than on other days of the week. But it is not probable that a definite desire to make up out-of-doors for the strictness of our indoor Sunday observances has ever been a conscious motive with our municipalities or our landscape-artists. New York, for instance, lags behind Chicago in the relative amount of ground improved for general park purposes; yet, in Chicago, theatres and similar indoor places of amusement have long been open

on Sunday, while in New York they are closed, and it is only within a year or two that our museums and libraries have opened their doors on this day.

It is probably true that the example set by our park authorities in allowing on Sunday many forms of amusement, like boating and skating, for example, has had an influence in bringing about a more liberal use of the museums for which the people have paid, and the contents of which they have small chance to enjoy during the week; and the value of Central Park, in demonstrating that the people of New York, whether rich or poor, crave rational, orderly forms of amusement on Sunday, and may be trusted to indulge in them discreetly, can hardly be overestimated. Still, to believe this does not justify the belief that Central Park or any of our other pleasure-grounds were established with a definite desire to make up out-of-doors for the over-strictness of American sabbatical customs in general. The hard struggle which was made before the grounds around the Chicago Fair buildings could be opened on Sunday, might have shown Dr. Wittmack the error of his assumption.

Further on in his address, which was full of the agreeable souvenirs of his transatlantic excursion, Dr. Wittmack praised the prodigious development of American horticulture, and declared that "it has freed itself in many directions from the tutelage of Europe, and no longer needs those importations from across the sea upon which it formerly depended." Even for "that wandering of the imagination which is shown in mosaic floral designs, too often covering the turf with bizarre imitations of the most strikingly prosaic kinds," Dr. Wittmack had a kind word to say, although he explained that they would be considered contrary to good taste in Germany. So, in truth, they are considered in America, in places where the best taste finds free expression in public pleasure-grounds. The foreigner finds none of them in Central Park, in Prospect Park, or in Franklin Park; and, although the Boston Public Garden contains too many pattern-beds, these include none of those effigies of men and things and animals in high-relief which so shock the eye in the South Park, at Chicago. In our eastern States, we think, objects comparable to these can be discovered only in cemeteries where control is vested, not in a municipal body or in an artist, but in some journeyman whose education has not kept pace with his employer's vague desire to "beautify" his grounds, or with his own wish to show how excellently he can grow plants under difficult conditions. Moreover, that less serious offense against refined taste, which displays itself in too many and too gaudy pattern-beds, is seen more often in Europe than in America. If the parks of Germany are free from such common-place treatment, this is not the case with the parks of France. Crudities in color and shape have been perpetrated in the Bois de Boulogne and in the Parc Monceau, in Paris, the like of which conspicuously displayed among distinctly naturalistic surroundings can hardly be seen in the older settled regions of this country. So far as our experience extends, some of the parks of Chicago are more conspicuous offenders in the way of mosaic decoration than any others, although excellent taste is shown in some parts of the same city, as, for instance, in the graceful, naturalistic planting of flowers and flowering shrubs along many portions of the Drexel Boulevard. It may distress our German friends to learn that we have heard the glaring park defacements of some western cities explained by the preponderance of the German element in their population. The correctness of this explanation may well be doubted.

In a report of the New York State Forest Commission, offered last week to the Legislature, special attention was invited to the necessity of some action relating to the Catskill forests. During several years past there has been a great deal of talk, without much effective action, concerning the North Woods, but the fact has been generally over-

looked that the forest area of the Catskill region is three-fifths as large as that of the Adirondacks. Of this woodland the state already owns about 50,000 acres in scattered lots, and it is in every way desirable that this should be made a solid tract by the purchase of additional lands, so that the whole could be brought under systematic forest management. The Commission thinks that it would be advisable for the state to acquire one hundred thousand acres of forest lying near the territory which it already owns, and they have presented a bill which includes provision for this purpose.

It is greatly to be desired that this Catskill forest should be secured at once. Divided counsels, repeated changes of plan and endless delays have left the Adirondack problem a more difficult one to grapple with every year since Horatio Seymour wisely urged the state to take possession of it, and every succeeding year there has been less forest to preserve, and what remained has been less worth preserving. It will be a cause of lasting regret if this effort to secure a Catskill Forest Reserve should only prove the beginning of more discussion, more postponement, and more half-hearted and shifting purpose. That policy has been tried long enough already.

The Megalithic Humboldt Monument in Berlin.

THE city of Berlin, although not among the oldest of the great capitals of Europe, is growing with a rapidity that rivals the giant cities of America. This continual expansion means, on the one hand, the destruction of countless old and beautiful gardens, and, on the other, a longing to plant new ones wherever this is possible. These changes bring sadness as well as pleasant anticipation, for, certainly, it is not an unmixed pleasure to live in an epoch of perpetual demolition. Buildings can be quickly reconstructed, but when groves and shrubberies are swept away their restoration is the work of years, still it is comforting to know that public parks and gardens are multiplying now in front of the gates of the capital of Germany.

Among suburban places of recreation our old and matchless Thiergarten shows the fresh beauty of the present and the majesty of the past. Its essential elements are Nature's own. Art has embellished its great forest-features, but it has not largely altered them. Moreover, being the only park adjacent to the richest quarter of the city, it is conspicuously preferred by society as a place for its promenades. On the other hand, to the northward of the city, is the Humboldt-hain, still young, but full of promise for the future. From day to day this garden of the people is growing into new beauty. Its vast verdurous expanse, less fashionable than the Thiergarten, but more artistically conceived and enriched with a larger number of botanical treasures, was established by the Berlin municipality for the especial purpose of providing an outdoor place of recreation for the working-classes at the very door of their homes. This park was designed and planted by Meyer, who died about ten years ago. In his soul the genius of a Pückler seemed to have been born anew, and in the service of one of the great municipalities of Europe a career was opened to him which gave free scope to his talent.

The name chosen for this park is an evidence that the greatest naturalist of his century still lives in the memory of his fellow-citizens. To this day the splendor of his name adds lustre to his natal town, and for the stranger Berlin will always remain the city of Humboldt. Some doubt exists as to the exact spot of his birth, but his baptism took place in Berlin, and he always regarded himself a true child of that town, and during his whole life held it in unalterable affection. Berlin really owed him, therefore, the tribute of its gratitude, and in giving his name to its recently established north park the city not only honored the man who is venerated in two hemispheres, but also honored itself by demonstrating that, in spite of the prevail-

ing power of military traditions in Prussia, it never ceased to congratulate itself on having added this star of the first magnitude to the galaxy of science.

Nevertheless, it was fated that, a short time after his death, the popularity of Humboldt should pass through a season of apparent eclipse. Was it because his convictions, too liberal for the friends of a king, were posthumously published through the indiscretion of a friend? Was it because of a total reversal of public opinion consequent upon three consecutive wars? Under the device, "Blood and Iron," a different form of hero-worship seemed to prevail, but Berlin remained unshaken in its prediction. Holding a position that was delicate in many ways, the administration of this royal city gave a fine proof of its independent spirit, by identifying itself with the traditions of the spirit of liberty, creating a park consecrated at once to the people and to the memory of so enlightened a soul as Humboldt's.

This courageous civic act was approved by the best citizens of Berlin. The new park was in itself a significant monument to the genius who had given it his name. And, moreover, by tardily erecting a statue in front of the court of the University, official Prussia had canceled a debt of honor which had remained too long unpaid. But the ardor of Humboldt's admirers was not yet contented; it aspired to something beyond the powers of the sculptor's art. At the end of that triumphal street, Under den Linden, this art had done its best to immortalize the great man. It seemed as though Nature had consciously reserved to herself the power to give him a still more original and more appropriate monument than the chisel could accomplish, and imagination boldly conceived of something which should resemble the granite cromlechs of prehistoric times.

The idea for this second Berlin monument to Humboldt took form in the mind and under the hand of one of the most distinguished citizens of the town. It was Ernest Friedel, municipal counselor, who gave the impulse, and then, acting with energy, put into execution, on a soil predestined by the name it bore, the plan for the new shrine. The Marsh of Brandenburg is situated in a vast plain, far from any mountains. No minerals exist there except scattered boulders—those "foundlings" which were transported to us by the disturbances of the glacial epoch. Nowhere do the foundation-rocks pierce the soil to recall, amid these sands and meadows, the hills and ridges of other lands. Even the great isolated stones are becoming rare, having been used in the construction of buildings and highways. But where they still exist they attract attention all the more strongly on this account.

It was by the use of these accumulations of boulders that the tumuli of very ancient times were built—monumental sepulchres of forgotten generations—"Graves of the Huns" or menhirs—in front of which to-day civilized man pauses in wonder, and disturbs only with regret. The idea was quickly conceived that the memory of Humboldt should be honored with a prodigious cairn. Unchiseled stone was appropriate for him, since he began his career as a miner and geologist. The archæological studies of Herr Friedel pointed toward the same end, and I had the happiness to assist these slowly ripening projects with my most ardent sympathy. At the outset the intention was to construct the cairn with stones picked up on all the sites, in every part of the globe, which Humboldt had visited, or, at least, which were connected with his studies. The auriferous quartz of the Ural was there to meet the dolomite of the Tyrol and the obsidian of the Peak of Teneriffe; the basalts of the banks of the Rhine were to be associated with the lavas of Vesuvius and of Chimborazo. This plan was not without its attractions, and with more perseverance there would have been nothing impracticable about it; but, in spite of offers of assistance from every side, it was finally abandoned, and, perhaps, not to the disadvantage of the monument; for, from an æsthetic point of view, it would have been a mixture of very heterogeneous elements that would have violated the geological conscience of Humboldt. Certainly it was better to confine the material

to the products of this land itself. In the severe grandeur of its accomplishment the fundamental idea now appears dignified and appropriate, and speaks to the heart with a truly antique simplicity.

Here, we are far away from the brilliant and aristocratic quarters of Berlin, in a faubourg peopled with working-men and humble folk, and somewhat ironically called the "Voightland." On a gently sloping elevation rises the primitive structure of rough stones, vaguely recalling the cyclopean walls of Greece or Italy. No trace of the hand of man is visible upon it. Two enormous longitudinal blocks (see page 46) seem to have been set, one upon the other, by the arms of giants. A third, equally colossal, but round in shape, lies beside them, while a multitude of large and small stones advance unsymmetrically to the right and the left, in an irregularity which is at once harmonious and picturesque, the whole being a faithful copy of primitive Nature as revealed upon this very soil.

The upper of the two great monoliths was found near Charlottenburg. It is of a pure deep rose-color and strangely traversed by irregular blackish veins, which mingle upon its surface as in a mystic design. With the other, placed at a lower level, it forms a little grotto, which is sealed with a slab of marble—the only trace of human art—bearing, in German, this inscription:

TO THE MEMORY OF A. VON HUMBOLDT,
THE CITY OF BERLIN.
1869. 1887.

A Lotus-blossom is sculptured beside it. The date 1887 marks the completion of the monument, which, contrary to custom, was never inaugurated by any official solemnity, but only by a modest ceremony organized by the Historical Society of Berlin, with Herr Friedel, as president, at its head.

A living spring of water trickles from the concavity of the rock, to disappear in the neighboring grounds as a little rivulet. From the platform in front of the cairn there opens a charming view across the vast lawn, separated into two parts by a bosquet of foliage. Farther away the eye wanders amid the verdure of the park, rich in rare plants, beyond which are groups of houses which, according to the character of the district, have nothing remarkable about them. Above all rest the golden vapors of the city.

Happily, trees existed here before building was begun. The middle distance behind the megalithic monument is, therefore, verdurous, with a little grove of Locusts already fully grown. A new plantation would have contrasted too forcibly with the archaic aspect of the structure. Citizens of the great Republic so beloved by Humboldt, may well consider it an homage to their country that trees of an American species throw their shade upon this sacred soil. Certain Spruces from Norway, sickly and smothered by the urban atmosphere, count for little. The plants which adorn the cenotaph itself are few and provisional. Lost among these blocks of stone, they will always play a subordinate rôle. In the near vicinity, however, a richer development of vegetation will probably be secured later on. At present some Heaths and Saxifrages suffice to give an appearance of verdure to these solid masses which nourish nothing else except some dwarf Yews and a little Ivy. For my own part, I proposed, as a setting for this spot, surroundings of grandiose vegetation composed of trees and shrubs connected either with the person of Humboldt or with his labors and his writings. I even developed this idea in a pamphlet which has been published. Thus far nothing of the sort has been realized. With regard to one point, however, I am sure that my intention will be accomplished. Recently two magnificent specimens of *Dracæna Draco* have been brought here as a present from a resident of Teneriffe. They are soon to be placed as sentinels in front of the monument; in pots, of course, as their tropical origin forbids their being planted in the soil itself. These classic trees, still young, will

stand as witnesses to an incident intimately connected with the juvenile impressions of Humboldt. There was formerly in Berlin an ancient specimen of this *Dracæna*, which had lived for more than a century in the Botanical Garden; and it first drew the attention of the boy to the marvelous vegetation of foreign lands, filling him with an ardent desire to study it more closely himself some day. Thus, thanks to the vivid imagination of a child, the first step was taken toward so many discoveries, and toward the creation of botanical geography. This was the writing by the way-side, showing afar off those enchanted regions which the unrivaled traveler was later to visit and to conquer for science. It will be agreed that the two monocolyledons from the Canary Islands deserve their places.

The fateful old *Dracæna* no longer exists; but it is pleasing to think of the young plants in question as the descendants of this colossus of Orotavo so well described by Humboldt and so well known to myself. Alas, a tempest has uprooted this witness to another age.

Berlin.

C. Bolle.

Notes for Mushroom-eaters.—II.

WE can now pass to the principal modifications of the toadstool stage, since the variations in the spawn do not enable the fungus-gatherer to distinguish poisonous from edible forms. After a button has reached a certain size, if we section it longitudinally, we see the beginning of the stalk in the centre, and closing over it the part which is to expand into the top. The stalk, which is called by botanists the stipe, soon pushes upward, and the top, the pileus, opens, and, according to the species, there will be found on the underside a series of plates like blades of a knife, called gills, radiating from the stipe; a compact mass of tubes, lying side by side, and pointing downward, or a series of teeth. The reproductive bodies, corresponding in function to seeds, are borne almost always in groups of fours on the surface of the gills, tubes or teeth, and easily drop off when ripe. They are microscopic taken individually, but collectively appear as a mass of powder, which can easily be caught by cutting off the stipe and letting the pileus rest for a few hours, with the gills or tubes downward, on a piece of paper. A knowledge of the microscopic details of a Toadstool are not necessary to the understanding of the rules for distinguishing edible from poisonous forms, and the reader wishing information on the subject should consult botanical treatises. For our purpose we can classify the bulk of the edible and poisonous fungi under the heads of Gill-bearing fungi (*Agaricineæ*), Tube-bearing fungi (*Polyporiceæ*) and Teeth-bearing fungi (*Hydneæ*). After obtaining a conception of the essential points of these three groups we can pass to a brief consideration of a few smaller groups in which edible forms are found.

Let us begin with the Gill-bearing fungi, an enormous group of plants familiar to every one. It is very important at the outset to learn to recognize what are the constant marks to be found in species of this group as distinguished from the variable characters which cannot be depended upon. Naturally, the uninitiated consider the color of the pileus to be important, but it should be remarked that the color of the pileus cannot be depended upon, for, while there are species in which the pileus has a nearly constant color, there are others in which it may vary from brilliant red to brilliant yellow, and with age most species lose their bright colors. If the color of the pileus in any given species is variable, and therefore of comparatively little importance, it should be borne in mind that the color of the spores, on the other hand, is practically constant, and in distinguishing edible from poisonous forms it is a question of primary importance, What is the color of the spores? Although the color of the spores can in many cases be inferred from the color of the gills, tubes or teeth when mature, one cannot always be certain. The only sure way is to observe the color of the spores which have fallen. Since many species have white or brown spores, they are

more easily seen if, in the treatment for collecting spores above described, colored paper of some neutral tint is used.

The color of the spores having been observed, the next point is to notice the peculiarities of the stipe. Whether it is hollow or solid, or has a sort of flocculent pith, is easily settled. The next point, and a more important one, is whether or not there is a ring round the stipe. The ring, or annulus, is, in comparatively few cases, strictly speaking, a ring. In most cases it might better be called a collar, for it is a membrane attached to the stipe, and either hangs down or, less frequently, is erect. In the Parasol-fungus (Fig. 5) and some others, it is really a ring free from the stipe, so that it sometimes drops down and escapes notice at first. We have said that the ring is a membrane, but the membrane may be reduced to very narrow proportions,



Fig. 5.—*Agaricus procerus*, the Parasol-fungus (two-thirds natural size)—edible.

or even to a small flocculent band around the stipe. The way in which the ring is formed may be seen on examining a young Toadstool before it has fully expanded, when it will be noticed that a membrane, the veil, extends from the stipe to the outer edge of the pileus, concealing from view the gills behind. As the pileus expands, this membrane ruptures and a part remains attached to the stipe, forming the ring, while a part remains attached to the edge of the pileus as a ragged appendage.

A very important point to be observed, more important than any before mentioned, is whether the base of the stipe is enclosed in a sort of ruptured bag, the volva. A volva is present in our most poisonous species, and is either plainly visible as a membranous bag, ruptured by the growth of the stipe upward, or it remains adherent to the base of the stipe in the form of large flakes or scales.

Other points to be noted are the character of the gills; whether sharp, like a knife-blade, or blunt and ridge-like; whether the inner edges of the gills do not extend up to the stipe, or whether they extend downward over it; whether, on breaking or cutting, there exudes a juice, and, if so, its color and the change of its color on exposure to the air; the density and texture, whether dry and hard or soft and watery; and whether, as it begins to decay, the fungus simply rots and becomes putrid, or quickly turns into an ink-like fluid. Most of these points can be settled at a glance. Lastly, what is not likely to be overlooked, the taste and odor should be noticed. Some persons, whose sense of smell is acute, are able to distinguish, especially with practice, many differences in odor, but most persons can recognize in fungi only certain peculiar odors, as that of anise, of flour, a certain fruity odor, an ammoniacal odor, a putrid odor, etc., found in certain species, and to them the mass of fungi have what they call a fungus odor not easily described. In most critical cases the sense of smell does not help much in distinguishing species, and it may be doubted whether those most confident in their ability to distinguish delicate shades of odor are as skillful as they believe themselves to be. As an instance of the uncertainty concerning odors may be mentioned a case where the writer asked a number of ladies and gentlemen to describe the odor of a quantity of the fungus *Craterellus lutescens*. The persons were questioned separately that one might not be influenced by the opinion of the others, and it turned out that all the gentlemen described the odor as a pleasant odor of fruit, while all the ladies said that the fungi smelled like pork. It should also be said that odors of fungi are transient, or, perhaps, intermittent, and in one species, *Russula foetida*, although the odor, as the name implies, is usually repulsive, it is sometimes pleasant, like that of bitter almonds. Taste is a much better guide than smell, but the beginner should be warned that, although tasting may sometimes show that it would be the part of common sense to avoid experimenting with certain acrid or nauseous species, on the other hand the absence of any disagreeable taste is not the slightest indication that a fungus is not dangerous. Our most poisonous species are all the more dangerous from the fact that they have rather a pleasant, certainly not an unpleasant, flavor. The delicate flavors of fungi so much prized by connoisseurs are only brought out by cooking, and, as yet, neither the American palate nor the American cook has been educated to the point of making fungus-eating with us the art which it is in France and some other countries. Mycophagy here is still in its infancy.

Harvard College.

W. G. Farlow.

Entomological.

The Plum Curculio as an Apple Pest.

THE Plum Curculio, *Conotrachelus nenuphar*, has long been recognized over a wide range of our country as one of the greatest obstacles to successful Plum-growing, and the insect has been known as a persistent enemy of other stone-fruits, such as the peach, apricot and cherry. For a good many years occasional references have appeared in entomological journals to its injury to apples, but it has very rarely been recorded as doing any serious injury to this crop; and the damage has seemed to be mainly from the punctures of the mature insect either for food or for the purposes of oviposition, for the larvæ seldom appeared to thrive and reach full development.

During the past season in a portion of an orchard at Chateaugay, on the south side of the St. Lawrence River, opposite Montreal Island, the plum curculio destroyed hundreds of bushels of apples, and in some varieties of the fruit appeared to have no difficulty in living its full larval period, and in leaving the apples in due season, and in good condition, to pupate and reach the beetle stage. Some apples had apparently been punctured and had larvæ in them for a time, but these seemed to have disappeared

before they could have fully grown. In such cases the apples were always more or less misshapen and bore the traces of the larvæ inroads wherever they had attempted to penetrate. In those apples in which the curculio larvæ had thriven their burrowings in the flesh were quite conspicuous in all fruit that remained on the trees, but most of the infested apples fell to the ground in early summer and the larvæ escaped, entered the soil to pupate and re-appeared as beetles at the end of July and in August and September. During the late summer and the autumn large numbers of the beetles could be found on the upper sides of the fruit, generally near the stems, puncturing little holes in the fruit and feeding upon it. These holes were never very deep, but were commonly from an eighth to a quarter of an inch in diameter, and sometimes much larger. A good figure, showing the character of this injury, is given on page 383 of the second volume of *Insect Life*.

But, as in the case of the Plum, it is when the larvæ infest the young fruit that the principal damage is to be feared, because the effect of the work of the larvæ is to cause the fruit to fall off prematurely. In the orchard referred to, several hundred young trees, which were expected to bear from half a bushel to two or three bushels of apples each, scarcely matured a perfect fruit, and, in fact, the ruin of the crop was complete as regards certain varieties. Duchess (sometimes called Duchess of Oldenburg) apples suffered the most, the fruit of several hundred young trees being ruined.

Red Astrachan and Charlottenthaler (yellow transparent) were also very much injured, and the fruit of several other varieties was greatly damaged by the grubs.

As no injury of this nature had been noticed in previous seasons, the important question suggested is: What was the cause of this sudden attack by such numbers of this insect? There are large quantities of wild Red Plum-trees or bushes growing along the fences within a radius of half a mile of the orchard, and for some years it has been difficult to find a good ripe plum, because of the ravages of the curculio, although the plants are white with bloom every spring. No effort has ever been made to control the curculio on these Plum-trees, but some years ago it was possible to get plenty of fairly good fruit nearly every season. Possibly the great increase in the numbers of the insect, which have multiplied here, has forced them to seek other and secondary food. If care was taken to destroy all unnecessary and uncared-for Plum-trees in the vicinity, and to properly guard those that were left, the insects probably would decrease and would not seriously affect the apples.

The affected orchard is planted in grass, the first crop of hay being taken off at the end of June, the later growth being allowed to remain on the ground. After properly guarding the trunks of the young trees, and removing any débris from their vicinity, it is proposed to burn over the stubble on some warm day during the coming spring, with the hope of destroying a large number of the beetles which have hibernated.

Later, just before and for some weeks after blossoming, it is intended to use arsenical poisons in moderate amount in combination with the fungicides for the scab, *Fusicladium dendriticum*, which has also become troublesome in this region in recent years. This will probably not be wholly effective, but some experiments have shown that the injuries by the beetles can be lessened by the use of poisons if care is taken that the Paris-green or London-purple is not applied so strong as to destroy the foliage.

It is possible that with a proper care of the Plum-trees, and the reduction in the numbers of the insects, they will no longer attack the apples to any serious extent; but any influence calculated to compel the curculio to resort to and acquire an increased relish for this fruit must be regarded as dangerous, to say the least. It is much more to be dreaded than the codlin-moth, which has never proved really very troublesome in this region, not one apple in a hundred being injured by it. This attack of the plum

curculio on the apple, and the increase in the destructiveness of the scab fungus, furnish fresh examples of the folly of neglecting disease of any kind, even when it is scarcely noticeable or not very troublesome.

Arnold Arboretum.

J. G. Jack.

Foreign Correspondence.

London Letter.

RANUNCULUS CORTUSEFOLIUS.—This is the giant Buttercup of Maderia, of which I sent a brief description in a letter published in *GARDEN AND FOREST*, vol. v., p. 174. It has lately been introduced in quantity by means of seeds. A colored plate, representing a bunch of the elegant bright yellow flowers as large as those of *Anemone Japonica*, is published in *The Garden* this week, prepared from a plant flowered at St. Albans in March last. The plant is not hardy here, except in the southern counties, but it can be grown in a cold house or frame, and in the warmer states of America it would probably become naturalized. It grows to a height of four feet and has lobed, hairy leaves a foot across. It is perennial, dying down to the large fleshy root-stock for the winter.

WASHINGTONIA FILIFERA, figured on p. 535 of the last volume, appears to be well established on the Riviera, where it is as abundantly represented as any other Palm. In one garden, namely, that of Monsieur de Falbe, in Cannes, there are no less than seventy-six large specimens of it, some of them having trunks eighteen feet high and over three feet in diameter. In another garden in Cannes a specimen of this Palm flowered last year. Seeing that it was not introduced into Europe until 1875, its abundance and the large size of many of the specimens on the Riviera are remarkable. In countries where the *Washingtonia* requires the protection of a glass house it is almost equally happy. At any rate, in a greenhouse at Herrenhausen, near Hanover, Herr Wendland has several grand examples, and there are also some healthy fast-growing specimens of it planted out in the temperate house at Kew.

AGANISIA LEPIDA.—This is a pretty white-flowered Orchid, which was first discovered in Brazil by Monsieur J. Linden about thirty years ago, but never successfully introduced into cultivation till recently. I saw a quantity of healthy plants of it in the nursery of L'Horticulture Internationale, Brussels, in June last, and several sales of it have occurred this year in the London auction rooms. It is now figured in Monsieur Lucien Linden's *Lindenia*, t. 400, the figure representing it as a tufted plant with short pseudo-bulbs, grass-like plicated green leaves a foot long, and an elegant semi-erect flower-spike two feet long, the upper half bearing ten flowers, each as large as the flower of *Odonoglossum citrosimum*, and not unlike it in form, pure white, save a tinge of yellow on the disk of the labellum and the violet color of the lower part of the column. It is a terrestrial plant, according to Monsieur Linden, who also states that under cultivation it "behaves splendidly, growing freely and flowering abundantly." It was happy enough in the houses at Brussels when I saw it, and if it does prove to be a good garden-plant it is certain to become popular, which can scarcely be said of the several species of *Aganisia* hitherto tried in English collections. *A. cyanea* is one of the most beautiful of blue-flowered Orchids, but it is a bad plant to manage.

DENDROBIUM SPECIOSUM.—There is an exceptionally large specimen of this noble Australian species in flower now at Kew. It has horn-like pseudo-bulbs a foot long, each bearing several broad leathery green leaves, and terminated by one or two large spikes of yellow flowers with a few spots of purple. It was one of the first Australian *Dendrobies* introduced into British gardens, it having been sent to Kew in 1823 by the Kew collector, Allan Cunningham. It is grown in a warm, sunny greenhouse.

PHAJUS BLUMEI, var. *ASSAMICUS*.—This name was given by Reichenbach to a plant which flowered in England in 1882, and which was then described as one of the most

variable of Orchids as to color. A figure of a pale-flowered form of it is now published in *Reichenbachia*, t. 69, where Mr. Rolfe says it is closely allied to *P. grandifolius*, *P. Wallichii* and *P. bicolor*. Sir Joseph Hooker, in his *Flora of British India*, goes further than this, reducing all four of them to one species, for which he retains Lindley's name of *P. Wallichii*. From what I know of these plants, I am inclined to accept Sir Joseph Hooker's decision. It is quite clear that *P. Wallichii* is a widely distributed plant, and, consequently, shows considerable variation, and that it is probably nothing more than a form of the Chinese *P. grandifolius*. Of course, for garden purposes, distinguishing names are necessary for all the well-marked forms.

THE ROYAL HORTICULTURAL SOCIETY's arrangements for the coming year are of exceptional promise. The usual number of bimonthly meetings and exhibitions will be held, and the committees of experts selected to adjudicate honors, etc., to the exhibits, comprise none but representative men. There are four committees, namely, Scientific, the members of which are chiefly botanists and entomologists, the function of this committee being diseases and the phenomena of plant-life generally. The Floral Committee deals with all new plants except Orchids, for which there is a special committee, while a subcommittee looks after all that appertains to Daffodils. There is also a committee for fruit and vegetables. The following is the list of lectures and



Fig. 6.—The Humboldt Monument in Berlin.—See page 42.

The plant called *Assamicus*, and figured in *Reichenbachia*, is exactly *P. Wallichii* in everything except color, in which respect it differs in having buff-yellow sepals and petals and a white and yellow labellum, the yellow being restricted to the tubular portion. At Kew there is a plant in flower which resembles that figured, except that the color is a shade darker and the lip is more yellow. We have no more useful Orchid than this *P. Wallichii* and its forms, for it is as easily cultivated as a *Eucharis* and it flowers freely every year. At Kew we have numerous forms of it, including *bicolor*, *Mannii*, *Sanderianus*, and *Blumei*. The best of all *Phajuses* is, of course, the hybrid *P. Cooksoni*, which is also, in my opinion, the best hybrid Orchid yet raised. It is well figured in the last number of Williams' *Orchid Album*.

papers promised for the bimonthly meetings. These papers are afterward published in the journal of the society, "The Deciduous Trees and Shrubs of Japan," by Mr. J. H. Veitch; "Rare Trees and Shrubs in the Arnold Arboretum, U. S. A.," by Monsieur Maurice de Vilmorin; "Hybrid Narcissi," by the Rev. G. Engleheart, M.A.; "Botanical Exploration in Borneo," by Mr. F. W. Burbidge, M.A.; "Orchids," by Sir Trevor Lawrence, Bart., President Royal Horticultural Society; "Flowering Trees and Shrubs," by Mr. G. Nicholson; "The Fertilization of Pansies," by Mr. J. D. Stuart; "On Cactaceæ," by Mr. John W. Singer; "Filmy Ferns," by Mr. J. Backhouse; "Fruit-culture in France," by Monsieur Charles Baltet; "Relations between Gardeners and their Employers," by Mr. Malcolm Dunn;

"Lord Bute's Vineyards," by Mr. A. Pettigrew; "How to Popularize Orchid Growing," by Mr. E. H. Woodhall; "Origin of Common Vegetables and their Value as Food," by Professor G. Henslow, M.A., F.L.S., etc.; "Chrysanthemums," by Mr. C. E. Shea; "Principles of Judging at Flower Shows," by Mr. James Douglas.

WILLIAM INGRAM.—English horticulture has sustained a serious loss through the death of Mr. Ingram, the gardener at Belvoir Castle, where he held the reins for forty years, doing first-rate work, especially among fruit and hardy alpine and herbaceous plants. He made Belvoir famous for its spring gardening by his skillful arrangement of all kinds of hardy spring-flowering plants, the whole garden wearing a natural and beautiful aspect at all times. He was an exceptionally well-informed man, ornithology and geology, as well as botany and horticulture, being pursued by him with zeal until just before his death. He was the son of the Queen's gardener at Frogmore, Windsor, where he was born in 1820. D. Lindley recommended him to be head-gardener at Hadfield, from whence he went to take charge of Belvoir Gardens in 1853.

London.

W. Watson.

Cultural Department.

Forcing Tomatoes.

IN New England, under the most favorable conditions, tomatoes can seldom be gathered in the open air before the middle of July, and as the outdoor supply is practically exhausted by the end of October we are dependent during nearly three-fourths of the year either upon inferior tomatoes from the southern states, or upon those grown under glass by near-by market-growers.

To produce good tomatoes in winter it is not necessary to have a specially built house. They can be fruited successfully in any light house where a minimum temperature of fifty-five to sixty degrees can be maintained. We utilize an end or some other portion of a Rose-house where the shade of the Tomato-plants is not likely to injure any plants below them, and we find no difficulty in having a good supply from the time outdoor plants finish bearing until they again come in. The first sowing of seed is made about July 10th, in a cold-frame; when sufficiently large to handle, the plants are pricked off into boxes of rich loam, from which they are successively moved to four-inch, six-inch and eight-inch pots, and from the latter size to their flowering-pots, which are usually twelve inches in diameter. The compost we use consists of two parts loam to one part well-decayed cow-manure, or a less portion of pulverized sheep-manure. The pots should be well drained and the compost pressed moderately firm. It is well to leave a space of at least four inches for successive surface dressings, which are very beneficial and may be given weekly as soon as the pots are well filled with roots, and the fruit begins to swell. For this purpose a small handful of sheep-manure and Barker's hill and drill phosphate, mixed with fine loam, will be found admirable. Liquid-manure may also be applied; once a week is often enough in the depth of winter, but later in the season it can be given every other day. Tomatoes are gross feeders, and any good liquid will serve the purpose.

From plants raised from seed sown on the 10th of last July we picked the first tomatoes on November 1st, before our outdoor supply was exhausted. A Tomato-plant will fruit profitably for six months with proper care; but it is not advisable to depend on one sowing for the entire season's supply, and we make successive sowings in October, December and January. Half a dozen pots from each sowing is sufficient for all the needs of an ordinary establishment. We grow our plants in pots, so that they can be moved about, if occasion requires. While they need more attention in watering than when planted out, they are less liable to be attacked by club-foot, and, in fact, while plants in beds invariably suffer in this way, I have never had any of the disease on pot-grown plants. Opinions differ as to whether a plant grown with a single stem, or one with lateral branches is the best. We prefer the latter in every case. The leaves are less robust, the fruit comes of a better shape and there is far more of it than on the single stem specimens. Two laterals are sufficient on a plant. Once a week all extra shoots should be rubbed off, decaying leaves removed and the plants tied up; it is well also to shorten back the more elongated leaves and thus give all the light possible to the fruit during the dark winter months. Tomatoes natu-

rally prefer a warm, dry atmosphere and should not be syringed at any time. If mildew shows itself the affected leaves must be cut off, and a mixture of sulphur and lime put on the flow pipe. Artificial fertilization of the blossoms is absolutely necessary from November to March; after that it is not required. The strings or wires may be tapped to disseminate the pollen, or the flowers can be separately gone over with a camel's-hair brush. The middle of a bright day should be taken for this operation.

I suppose every Tomato-grower has his pet forcing variety. I have tested a dozen varieties during the past four winters, and the one which stands out pre-eminently at the head of the list is Nicholson's Hybrid. The tomatoes are of small size, averaging six to eight to the pound. It sets from five to eight on a bunch in winter, and occasionally ten to fourteen; the fruit is solid, smooth and delicious in flavor. It commences to fruit when younger than any other kind and produces smaller foliage than other sorts tested. We purpose retaining Nicholson's Hybrid and growing no other until some better variety asserts itself.

Taunton, Mass.

W. N. Craig.

Chinese Primroses.

FEW plants have been taken in hand by old-time cultivators which yielded to improvement so readily as *Primula Sinensis*. We are forcibly reminded of this by the rediscovery of the wild plant in the mountains of Ichang by Dr. Henry and others, after the lapse of seventy years or more. In the original plant the petals are deeply lobed in the centre and perfectly smooth at the edges, but through the selective skill of the cultivator these features are eliminated, and in their place we have a perfectly round flower, the petals thick in texture, exquisitely fringed, and of almost every conceivable shade of color except yellow. It must be remembered, also, that all of this is due to training and selection alone, and none of it to hybridizing, for *P. Sinensis* has hitherto refused to cross with any of its relatives; that we have pure white, deep red, crimson, pink and lavender shades of this flower from the original color, and that a poor one is a result which helps us to appreciate what can be accomplished by patient striving with a definite aim in view.

At all events, we have secured a most useful winter-flowering plant within the reach of any one who can command the use of the most modest greenhouse. Our summer weather is rather too warm to be exactly adapted to the needs of the Chinese Primrose, but in a cold frame, placed in a shady position, the plants grow well during the hottest weather, especially if the sashes are removed at night to give them the benefit of the night dews. These Primulas are most useful from November to February, a period when there is always a dearth of good pot-plants in flower, and to have good plants at this time an early start must be made, so we always sow seed the last week in March. The seed germinates slowly, and often unevenly, so that it is best to take out the largest ones as soon as they are of sufficient size to be moved, and this will give the weaker ones a chance. For potting material, good loam, leaf-mold stacked one year and chopped fine, some material from a spent Mushroom-bed, and plenty of sand added, make a compost that Primulas, Cinerarias and Cyclamens delight in. It rarely pays to pot Primulas in pots larger than a six-inch size unless huge specimen plants are required. For such a purpose the most vigorous plants may be selected during summer and grown on as vigorously as possible. Plants from seed sown earlier than the date recommended often flower prematurely, and the colors are never good until the cool winter months, neither are they seasonable. As has been said already, a cool place in summer is desirable for the growth of Primulas, but on the approach of cold damp weather in fall it is best to remove the plants to a cool greenhouse where a temperature of at least fifty degrees can be maintained at night, with a rise of a few degrees by day. Careful attention to watering is essential during the dull months of winter, or the plants decay at the level of the soil.

The so-called blue Primulas are more delicate than those of other colors; so much so that to secure good plants it is best to sow the seeds at least a month earlier than the other kinds. More warmth, too, is required in the autumn months to do them justice; but any extra attention is well repaid for the shades of lavender showing up most attractively among the intense crimsons and pure whites. Special varieties are so numerous now that it is impossible to keep account of them, but we have been much pleased this season with Rosy Queen, a beautiful soft pink, the color being uniform and the foliage Fern-leaved. Gipsy Queen is also distinct, having deep purple

leaf-stems and pure white flowers, a striking contrast that is noticed at once.

There is also an improvement in the double varieties one can obtain from seed, and these flowers last longer than the single ones, but are not so effective. A race of perfectly double *Primulas* was formerly cultivated and perpetuated by means of cuttings each year. These were known as Gilbert's strain, and very beautiful they were, but we do not hear much about them now, though I remember them as being very handsome, although not easy to propagate. We have heard much during the last two years of the "Moss-curl'd" section, varieties that have foliage much crisped at the edge, and are novel in this respect, but the flowers are poor and small, and neither single nor double. The single ones with plain foliage are far better for all purposes.

Chinese *Primroses* can be relied on to come true from seed if procured from good sources, and this is a great point in their favor. On the contrary, it is most difficult to obtain a good strain of *Cineraria*-seed. On one occasion I had such a strain, and attempted to perpetuate it by careful isolation and use of a camel's-hair brush, but the results did not warrant the attempt again. There would be a great demand for a reliable strain of *Cinerarias* if good seed could be obtained as readily as that of *Primulas*, *Gloxinias*, *Cyclamens* and *Calceolarias*.

South Lancaster, Mass.

E. O. Orpet.

The Earliest Flowers.—The present winter in this section has been one of an average mild temperature, with much softening of the ground in day-time, though scarcely free from frost in any night. It might be thought that, under such conditions, the winter-flowering plants which make progress whenever the upper soil is loosened, would have come forward rather more rapidly than usual. Such has not been the case, and the first *Snowdrops* and *Crocuses* of the season are only just appearing. Of course, the first starting of vegetation in the early year is a movable feast, influenced by more or less rigid conditions of temperature, but in the majority of seasons here *Galanthus Elwesii* will show flower during the first two or three mild days after New Year's, and another of my tests, seeds of *Scilla Sibirica*, will germinate at the same time. I have observed, however, in the latter case, that temperature is only one factor, for germination does not take place freely, if at all, unless we have had a fall of snow, the melting of which seems to give the necessary quickening effect. This is a fact well known to hardy plantmen who use this quickening action in germinating certain seeds of alpine plants; but it has interested me to watch my border for seven or eight winters and verify the fact. This may be one cause, and probably the principal one, of the delay in the flowering of my arctic and alpine plants. Such plants in their native environments are covered with snow, the melting of which releases them, and under the stimulus of abundant water in which is incorporated ammonia or other elements stored in the snow, they make in the sunlight a growth which in quickness, if not in luxuriance, can scarcely be rivaled in the tropics. Except for one or two small flurries, we have had no snow here this season, and this seems to me a sufficient reason for a fortnight's delay in such things as *Anemone blanda*, *Galanthus Elwesii* and *Crocus Imperati*. The first of these, as yet, makes no sign. However, in such things one can only write with a reservation, for it is only after observations extended over a term of years that one can speak with any confidence, and even confidence is tempered by the knowledge that nature sometimes works in a mysterious, and before unobserved, way.

Elizabeth, N. J.

J. N. G.

Persimmons in New York.—My success with this fruit in this section has been remarkable this year. Cions, procured of the Secretary of the Missouri Horticultural Society, were set in 1892. In 1893 these bore masses of fruit, not scattered along the limbs, but in large clusters. It was not ripe before frost; but after a good freeze it was gathered and stored. The astringency, slightly perceptible even after freezing, soon passed entirely away. It is desirable to obtain very early varieties for this section, whereas those I have are rather late. Even these persimmons were delicious, and they make a fine addition to our November fruits. There is no question of the hardness of seedling trees, but they are likely to be barren, as mine were, until grafted.

Clinton, N. Y.

E. P. P.

Correspondence.

The Care of Birds in Winter.

To the Editor of GARDEN AND FOREST:

Sir,—The occupant of the Smith Lodge on the grounds of Mr. H. H. Hunnewell, at Wellesley, finds it a pleasant duty to care

for the insect-feeding birds which make their winter home here. Whenever the weather is fine these birds may be seen at work searching the bark for the eggs and larvæ of insects which infest the trees in summer. In very stormy weather, and especially when the trees are coated with ice, the birds suffer severely, and they then come quite close to our back-doors in search of food. It is evident that, if we are to have birds, and wish to encourage their breeding in this vicinity, we must feed them during severe winter weather. A good plan is to place scraps of animal-food in a box protected from cats and from larger birds, such as the blue jay, which is very thievish.

The downy woodpecker, the smallest of the woodpecker family here, digs into the bark, making circular holes about a third of an inch in diameter; they are seen particularly on Apple-trees, arranged in a circle around the trunk.

The white-breasted nut-hatch, also called the trumpeter, is a most persistent worker, and probably destroys more insects than any other bird. He takes up a stretch of the tree about one foot wide, working in zigzag fashion, and when one section is finished he returns to the base of the tree, working upward only.

The red-bellied nut-hatch is similar to the preceding, but is smaller. This bird is peculiar to the Conifer districts, and an interesting characteristic is that he secures a stock of provision for himself, and no plea need, therefore, be made for a food-supply for this bird. Gathering Conifer-seeds, and particularly the fatty matter which surrounds them, he stores these in the crevices of the bark, generally on the south side.

The little brown creeper, as he goes up and down the trees, looks very much like a mouse. He sleeps in a crevice on the south side of the tree, and is very hard to discover when not moving. He has a very long bill, and no crevice escapes him, and he searches the bark of all kinds of trees.

The black-capped titmouse is familiarly known as the chickadee. This little bird follows the woodchopper wherever he goes, feeding on the grubs which are dislodged in the work of cutting down trees. All these birds are found in company, and this indicates that their food is very much the same.

Regarding the much-abused English sparrow, it was observed last summer that these birds fed their young on the caterpillars of the cabbage-butterfly. Since the sparrow, so far as observed, is rarely an insect-feeder, the birds were closely watched. It is certain that the young birds are fed with insects, but as soon as they can help themselves they become grain-feeders, like their parents.

Wellesley, Mass.

T. D. H.

Meetings of Societies.

The Western New York Horticultural Society.—I.

NOTWITHSTANDING the depressed condition of trade, over 400 persons were in attendance at the opening session of the meeting of the Western New York Horticultural Society, in Rochester, last week, among whom were well-known fruit-growers and scientists from several states and from Canada. The annual meetings of this society are, without doubt, the most enthusiastic and important horticultural gatherings held upon the continent. Rochester is in the centre of the most varied horticultural region in the country. All the fruits of temperate climates are largely cultivated here, while, at the same time, it is the most varied nursery centre of the New World. Many other regions boast larger orchards and nurseries, but in the number of men engaged in the business, and especially in the great diversity of edible and ornamental products grown, no other territory in North America approaches it. The western New York country has always been prosperous, and, among other institutions, schools, academies and colleges have thrived, and the average grade of rural intelligence is very high. This is forcibly illustrated in the appreciative attention which papers upon ornamental plants, as well as those on fruit-culture, always receive before these annual conventions. Rochester is itself the seat of an excellent university, and Cornell University is only 125 miles away, on Cayuga Lake. The latter institution always contributes freely to the meetings, and at this session about forty of its students attended in a body. The State Experiment Station at Geneva has also been a strong factor in the maintenance of the society.

THE PRESIDENT'S ADDRESS.

President Barry congratulated the society on its flourishing condition at this its thirty-ninth annual meeting and on the large attendance even when the outlook for fruit-growers was not hopeful. He did not attempt to trace the causes which had brought suffering upon this industry. If it was from excessive production, the aim should be to produce a higher grade of fruit and to use greater care in handling, sorting and packing. There seems to be no reason why young men should desert farming and fruit-growing for other pursuits, for while only three per cent. of all merchants escape failure, hardly three per cent. of farmers fail. Statistics show that agriculture is safer than banking, manufacturing or railroading, and there is no good reason why farming and fruit-growing should not pay well if the business is conducted on correct principles and with an enthusiastic desire to excel in every particular.

Good books, weekly horticultural and agricultural papers and the reports of experiment stations are necessities for fruit-growers. Progress made in controlling injurious insects and fungus diseases has been largely due to the work of the Department of Agriculture and the various experiment stations. In combating these enemies system and co-operation are demanded throughout all fruit-growing regions, so that no breeding-places are left for parasitic fungi or destructive insects. That farmers fail to take the full advantage of the information furnished by the stations is shown by the fact that only 300,000 of them in the country receive these bulletins, which is a comparatively small fraction of the entire number.

As a matter of practical cultural advice, Mr. Barry recommended the planting of wind-breaks, not only to protect orchards against winter storms, but against such wind-storms as those of last September, which were very destructive to fruit in western New York. Such severe storms are rare, and yet it is not uncommon to have high winds in early autumn which blow down the largest and best fruit, and it is, therefore, advisable for fruit-growers to prepare for such emergencies by planting wind-breaks of evergreen or deciduous trees on the north and west sides of their orchards.

PREVENTION OF PEAR-SCAB.

Professor S. A. Beach, of the Geneva Experiment Station, gave the results of some successful efforts to control this disease during the last season. The fungus which causes the Pear-scab resembles the Apple-scab fungus in general appearance, and in its life habits, so far as they are known, and since the Bordeaux mixture had been successfully used in treating Apple-trees, the same remedy was tried in a Pear-orchard. This orchard was situated on high land, near Seneca Lake, and on account of the disease had produced little first-class fruit for several years. Two of the varieties peculiarly susceptible to the attacks of the fungus, White Doyenne and Seckel, were selected for treatment; and since the investigations have shown that this disease of the Pear, as well as the allied trouble with the Apple, begins its work before the blossoms open, part of the experiments were to test the efficacy of early treatment, and, therefore, three applications before blooming were made in some instances for comparison with the effect of two applications. The Seckel-trees treated were surrounded on all sides by unsprayed and affected trees, so that the sprayed trees were constantly open to attacks of the fungus. If an entire orchard were treated, this source of infection would be measurably obviated. One block of Seckel-trees were sprayed on the third of May, when the buds were just swelling. A week later these were treated at the same time with the second block of Seckels and the White Doyennes. The cluster-buds were then opening. The next spraying was given when the trees were just beginning to blossom, and as soon as they were out of blossom they were sprayed again, and Paris-green, at the rate of an ounce to eleven gallons, was added to the Bordeaux mixture as a protective against the codlin-moth. The experiments left it doubtful whether three treatments before blooming were better than two, but there was no doubt as to the value of the mixture as a preventive of scab. Without going into details it may be said that the cost of six treatments averaged fifty-five cents to a tree, and five treatments averaged forty-eight cents, and that the gain in the value of the marketed fruit over all expenses varied in the two varieties from \$42.94 to \$56.24 to every hundred trees. A severe wind-storm three weeks before the pears were picked blew down many bushels of the fruit, and but for this the showing would have been more favorable than it actually was. It should be remembered, also, that this average gain of more than \$50.00 on a hundred trees from the sale of fruit does not represent all the benefit from the spraying. The treated trees had a more healthy foliage, and, therefore, they went into the

winter in better condition and better prepared for a good crop next year than the unsprayed trees. This increased health and vigor of the sprayed trees was shown by the fact that during the wind-storm mentioned above a larger proportion of the fruit held on to the trees which were sprayed than on the unsprayed trees. Professor Beach seems, therefore, quite justified in saying that tens of thousands of dollars might be annually saved by the pear-growers of New York state by the adoption of this treatment to prevent the depredation of fungus and insect enemies of the pear. One pound of copper sulphate to eleven gallons of the mixture was used.

In another interesting paper on the leaf-blight of Plum and Cherry nursery stock Professor Beach showed that the advantage of using the Bordeaux mixture was seen in an increased growth both of roots and of tops and in healthier foliage, which remained on the branches a month later than the unsprayed foliage did.

THE BEST PLUMS.

One of the most interesting discussions of the Convention was upon the subject of Plum-culture, and was led by Mr. S. D. Willard, of Geneva. Mr. Willard believes that Plums are particularly influenced by soil and other local conditions, and this makes it more difficult to give general advice about them than about almost any other fruit. This may be one reason why so many persons fail in Plum-growing. Mr. Willard has had a wider range of experience than any Plum-grower in New York, and, therefore, the following lists of the best market plums for this region are unusually valuable: For the first six he names, (1) Bavay, Green Gage or Reine Claude; (2) Hudson River Purple Egg; (3) French Damson; (4) Fellenberg or Italian Prune; (5) Grand Duke; (6) Monarch. The varieties numbered 1, 4 and 5, as a rule, thrive best when top-worked on other stock, because they are poor growers. These six are enough for a commercial orchard in this region. If the list were extended to twelve, the following would be added: (7) Field; (8) Bradshaw; (9) Guai; (10) Golden Drop; (11) German Prune, if care is taken to secure the true variety and not some spurious type; (12) Peter's Yellow Gage. Of the Japan Plums he recommended Yellow Japan, the true Sweet Botan and Burbank, with Willard for very early. Lombard and Union Purple are first-rate stocks upon which to work the poor-growing varieties. In Mr. Willard's opinion the Niagara and Mooney Plums are identical with Bradshaw, the Silver Prune of California is identical with Coe's Golden Drop, while the Hungarian Prune of California is the same as Pond. The true Hungarian Prune, however, is a very different tree and fruit.

The subject of cold storage for apples was discussed in a novel way by C. H. Perkins, of Newark. He cited the instance of the cheese interests, which have been greatly benefited by co-operative manufacture. Dealers now come directly to these factories to buy. The same thing should be done with apples by establishing a system of neighborhood storage of barreled fruit. Mr. Perkins does not advise ice-storage, but the erection of large frost-proof cellars, much like the nurserymen's cellars, in which the fruit can be kept at a naturally low temperature. Mr. Perkins has such a building, erected for nursery stock, which has been used for storing apples with excellent results. This building holds 10,000 barrels, and cost \$1,400. It is 100 feet by 40 feet, built upon a stone wall two feet thick and three feet high, and the sides of the structure is built of studding hemlock sheathing and building paper, comprising three air-spaces. The roof is tarred and graveled, and it has windows sufficient to light the structure. The sides are about six or seven feet high. In such a building, with double doors, the temperature need not vary over twelve degrees throughout the winter. Such a building belonging to a neighborhood should pay four years out of five to the extent of fifty cents profit on a barrel, and should make apple-growing in New York more profitable than orange-growing in California.

The display of fruit was rather large, and it was particularly valuable because of the great variety shown. Ellwanger & Barry exhibited forty varieties of pears, forty of grapes and twenty-five of apples, and other exhibitors made displays of special varieties. The Anjou pear was the most noticeable single variety of fruit on exhibition. The Boiken apple, one of the more recent Russian introductions, was shown in fine condition, and attracted attention for beauty and long-keeping qualities. Its quality is fair. Longfield, a Russian apple of great beauty and productiveness, was also on exhibition. The specimens of Josephine de Malines, one of the prominent but little-known winter pears, were taken from cellars, and not from special cold-storage houses, and the display was an excel-

lent illustration of the possibilities of fruit-culture for domestic as well as commercial purposes.

The newly introduced Japanese plums were the subject of important discussions. Many growers have now had experience with these fruits, and all agree in pronouncing the varieties, except, of course, the Kelsey, hardy in New York. The chief varieties so far tested are the Abundance, Burbank, Willard, Ogon and Satsuma. These are all remarkably productive and the fruits are showy and long-keepers. Willard is the earliest, ripening at Geneva in the middle of July; Burbank ripens early in September and is probably the best in quality. Many growers have planted several hundred trees of these Japanese Plums, and it was evident from the discussion that they are considered important additions to our stone-fruits.

An interesting discussion turned upon the last year's prices for Chautauqua grapes. The average price throughout the season for Concord and Wordens was eleven cents for a nine-pound basket. But it was agreed that even at this price grapes were much more profitable than general farming; and at twelve cents they pay fairly well. This will not apply, however, to the Catawba industry in the interior regions. In 1892, the receipts for grapes in the Chautauqua region were considerably over \$1,000,000, while in 1893, with an increased production of more than 300 car-loads, the total receipts fell to \$809,000.

Among Currants, the White Imperial received great praise for home use, because of its sweetness, while North Star, a new, brilliant red variety, of good quality and long clusters, was favorably mentioned for market. The Wilder currant was also commended.

Notes.

One of the beautiful trees on the grounds of the United States Botanic Garden at Washington is a Wahoo, *Ulmus alata*, which even in the winter season has a peculiar grace on account of its very slender branchlets. A little more than seven feet from the ground the trunk divides regularly into branches which spread over a circle sixty feet in diameter. The tree is fifty-five feet high, and its trunk girths five feet at two feet above the ground.

The shipment of currants last year from the Greek ports amounted to about 105,000 tons, of which 15,500 came to the United States and Canada. A heavy stock is reported as still remaining in Greece, and yet the value of the fruit here is now only one and three-eighths cents a pound in barrels, and one and one-half cents a pound in cases. Of course, this does not cover the cost of importation, and the business is being done at an actual loss. Nevertheless, the tendency of the market is downward, so that currants at present prices are by no means costly luxuries, but a very cheap food staple.

Since *Vitis Coignetiae* was mentioned in these columns there has been considerable discussion about the plant in the European horticultural journals and a general complaint has been made that it is difficult to propagate. Mr. Jackson Dawson, of the Arnold Arboretum, has found no more trouble with it than with many other Grapes. Cuttings are taken three or four eyes long of well-ripened wood in November. They are put in a box of soil and kept in a cold pit until January, and then brought into a temperature of about forty-five to fifty degrees at night, with an increase of ten to fifteen degrees during the day, and they root very well. An experiment in grafting a few cions of *V. Coignetiae* on stocks of *V. riparia* also succeeded. Seed can be had, however, fresh from Japan, and in this way the plant can be grown in abundance.

At the last exhibition of the Massachusetts Horticultural Society several first-class certificates of merit were awarded to Mr. William Robinson, gardener of Mrs. F. L. Ames, for hybrid Orchids, besides a silver medal for skill in producing many of them. Among the most interesting were *Masdevallia Rebecca*, a cross between *M. ignea* and *M. amabilis*; *Masdevallia Mary Ames*, a hybrid between *M. ignea* and *M. Gairiana*; *Masdevallia Henrietta*, a cross between Shuttleworth's variety of *M. caudata* and *M. ignea*. An interesting *Selenipedium* named *Helenae* was a cross between *S. Wallisii* and *S. leucorrhodon*. Other plants from Mrs. Ames' collection were the very rare *Laelia Mossiae* Digbyana, a magnificent plant of *L. anceps* Sanderiana, and another of *L. anceps* Schroederi. Other exhibitions of merit were made by Charles Storer, Jackson Dawson and Kenneth Finlayson, gardener to Dr. C. G. Weld.

The *Rural New Yorker* considers the Columbus Gooseberry, introduced by Messrs. Ellwanger & Barry, the best variety yet

produced, as it bears a large berry and is free from mildew. The bushes yield abundantly in full sunshine, and the berries do not suffer from rot nor the leaves from mildew. A new Gooseberry, named the Carman, not yet introduced, seems to have the good qualities of the Columbus, and it ripens ten days earlier. A berry named the Chautauqua, now offered by Mr. Lewis Roesch, of Fredonia, New York, when planted in gravelly loam in the shade of an Apple and Peach orchard was perfectly healthy, and for many years bore crops of remarkably large and beautiful fruit. After the trees were removed the bushes were subject to mildew, and the variety was no longer propagated. Since it has been found that spraying with sulphite of potassium easily overcomes the mildew, Mr. Roesch is again offering it for sale. The Chautauqua is a vigorous, upright grower, with large dark green leaves, fruit of light yellow color, free from spines, and from one inch to an inch and a quarter in diameter. The fruit is said to be thick-skinned, but sweet and well flavored.

To facilitate the unloading of bananas from the steamers, a patented device of an endless canvas belt is being put in one of the best-equipped lines running regularly between Jamaica and New York. Pockets are arranged on the belt at intervals of three feet, each carrying a bunch of the fruit to the deck, where it passes into the arms of a man. By this improved method the bananas are handled by less than half as many men as in the old way, and entirely escape bruising by being passed through so many hands. It is purposed to have a belt for each hatch, operated by the hoisting-engine, and each belt can lift 1,800 bunches in an hour. The Jamaica banana steamer last week included in the cargo something of a rarity in several crates of cucumbers of excellent quality and several barrels of so-called Jamaica papaws. Good mangoes from Cuba have been seen in the fancy fruit-stores as low as five cents each. Strawberries from Florida are coming in increasing quantities and at reasonable prices; the best bring seventy-five cents a quart. Occasional offerings of Coe's Late Red plums of fair quality show the remarkable possibilities of this variety as a winter fruit.

Broom Sedge, *Andropogon Virginicus*, is generally considered a troublesome weed in the south, and yet many permanent pastures owe much of their value to it. This grass starts early in the spring, when cattle and sheep relish it and seem to thrive. When it has attained full growth its tall, hard, rough and wiry stems are rejected by horses and cattle, a circumstance which has given it a bad repute; but it has the merit of growing on dry, sandy soil where other grasses fail, and in Pine-woods, and while green and tender it furnishes most of the food which stock can get in such places. At the Maryland Experiment Station the hard stems and blades of mature Broom Sedge were cut up, and before they were entirely dry, run through a fodder-cutter and placed in alternate layers with corn-stalks in the silo. According to a report in *Agricultural Science*, this grass came out during the winter in good condition and was eaten with relish by the stock. A sample of the Broom Sedge silage, which was analyzed, shows that it contained more of the essential constituents of food than the corn, and this would indicate that this grass, which has been considered worthless, may add much to the supplies of good winter forage in the south.

At the late meeting of the New Jersey Horticultural Society at Trenton there was general complaint that the Paris-green bought as an insecticide is not of uniform quality. An instance was cited where in a potato-growing district a farmer found after he had sprayed with a machine more than a hundred acres of Potatoes that the beetles were still alive and that the labor and material applied had all been wasted, although he had used exactly the same quantity which had been sufficient for his purpose the year before. He was compelled to go over the same fields again and use a mixture twice as strong. In the case of Potatoes and Currants one can soon tell whether the Paris-green is effective by its immediate effect on the beetles and larvæ, but in the case of the codlin-moth it is often impossible for the fruit grower to know immediately whether the poison used is efficient or not. It was said that in states where the sale of fertilizers is under control the same precautions could be used with the arsenites and other poisons; that is, dealers could be obliged to guarantee the proportion of arsenic or other active poison in the compounds they sell just as they guarantee the composition of fertilizers. It may be, however, that the difference in effectiveness between one brand of Paris-green and another consists not in the percentage of arsenic which each contains, but in the coarseness of the grain. This is a point which it would be easy to determine.

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The Increasing Number of Plant-pests.

A CORRESPONDENT who writes to us concerning the work of the experiment stations, speaks in terms of mild censure and considerable regret over the fact that he finds so little in the station bulletins except accounts of insects and fungi, how they live and how they can be killed. He asks whether the gardens and grounds of the stations are much more than hospitals for sick and wounded vegetation, and expresses the opinion that they would be more generally useful if they would give some information and instruction as to the proper treatment of healthy plants which are not preyed upon by bugs or worms. This is a criticism which we consider entirely without foundation. It is not true that the stations neglect investigations relating to plain cultural matters. As a matter of fact, they are now giving more thorough study to soils, to fertilizers, to plant physiology and to practical details of cultivation than they ever gave before. Why these matters seem to be neglected is that much more attention is paid to the diseases of plants and their destruction by insects than was formerly the case, so that the other work seems small in comparison. The same tendency is observed at the meetings of every horticultural society or farmers' institute, and it means, in the first place, that we have only recently learned to locate the causes of many horticultural failures. So long as the Apple-scab, Potato-rot and a good many other plant diseases were considered as the results of the weather, and therefore beyond control, there was no need to study the habits of the fungi which caused them, and so long as insects seemed visitations of God that it was useless to struggle against, there was no need of studying the life-histories of these pests. Now that we have learned to attribute our failures to special causes, it is very evident that a study of these causes is of the highest and most immediate practical advantage.

Besides this we must face another fact, which at first seems most discouraging, which is, that the enemies of our cultivated plants in this country have rapidly multiplied within recent years. No new insects have been created, but new

feeding-grounds and new breeding-grounds have helped them to increase to formidable numbers. Upon this point Dr. Lintner has well stated the case when he explained that two hundred years ago, when there was not even a Wild Crab in central New York, there were no Apple insects. When a few Apple-trees were planted by the early settlers and offered desirable food, the insects were compelled to fly for miles to find a tree where they might lay their eggs; but now, when there are orchards which spread almost unbroken masses of foliage over hundreds of acres, Apple insects by the score find root, trunk, twig, bud, leaf, blossom and fruit spread out before them like a banquet to stimulate appetite and hasten on their destructive growth. Besides this, fruit and vegetables and cultivated plants of every sort vary into widely different forms, and in this way invite attacks of different kinds of insects. It is not only that the cultivated plants furnish more and richer food, but they furnish a greater variety of food, to sustain a greater variety of insect life. The destruction of the wild plants upon which the enemy originally subsisted in small numbers may have discouraged them for a time, but it also drives them to seek cultivated plants, and they soon adapt their tastes to what they find ready. With new food supplies prepared for them they can live with less conflict with other tribes once their competitors, who also find fresh fields to conquer, and so both classes are left to multiply unchecked. Besides this aid given to our native insects, many have emigrated here from other lands, and leaving behind them the parasites which have kept them within bounds at home, they begin their destructive work without these natural checks which are only developed after long years in their original surroundings.

The same conditions have helped to multiply contagious diseases. The black-knot fungus of our Wild Plum trees has found orchards planted to make a pleasant home for it. Apple-scab and leaf-blight, Grape-rot and mildew sweep like fire through the almost endless stretch of contiguous orchards and vineyards. Improved varieties of the Tomato invite a rot which those nearer to the wild type rarely harbor. There are new varieties of Apples which are peculiarly affected by scab and blight, new varieties of Blackberries and Raspberries which are special favorites of the rust; and as the different forms of Carnations multiply, many of them are susceptible to diseases which once were almost unknown. Every time we disturb the natural order of things to produce something new in cultivation and better for our use, we open new fields of enterprise for insect life, and offer additional hospitality to parasitic fungi, where both can live with less struggle and find greater advantages for their development.

Looking at these facts calmly one can hardly feel that any precautions against the assaults of these ever-increasing foes can be too great. It has been stated, on what seems good authority, that the destruction of agricultural products in this country by insects and fungous diseases amounts to \$500,000,000 a year. Whether the loss of a million and a half dollars a day is a little too large an estimate, or not quite large enough, certain it is that the amount is bewildering and altogether beyond the grasp of the ordinary imagination. Instead of depreciating efforts to arrest this destruction, those who are giving studious attention to the discovery of ways and means for warding off these attacks or mitigating their violence deserve only commendation and sympathetic support. As a matter of fact, the most marked improvement in agriculture and horticulture during recent years has been in this very direction. The rapid changes in the physical features of this country, owing to its recent settlement, have made our cultivated plants more liable to attacks than they are in older countries where the conditions are more stable, but fortunately these greater trials have stimulated us to more earnest and honest effort, so that we are now in advance of all other nations in the variety and efficacy of our devices for protection against our enemies. Indeed, the spraying-pump marks an epoch in the history of horticultural practice. Not long ago

fruit-growers were threatening to grub up their vines and cut down their orchards, but to-day we are growing more fruit, handsomer fruit and better fruit than any other country in the world.

Horticulture at the Midwinter Fair at San Francisco.

WHEN the California Midwinter Fair was first suggested the horticulturists of the state recognized the fact that a very dry winter would prevent a good display, and a very cold, wet winter would discourage visitors. Fortunately, the season, so far, has been favorable, though a little late, and it is now probable that all who come to California this spring to study the horticultural possibilities of the state will be able to see things about as they average.

I am writing these notes at a western window of a farmhouse. It has been raining for two days. The total rainfall for the season is thirteen inches, and we confidently look for three or four inches more by the first of May. The last seven weeks have brought the district about three-fourths of the probable annual rainfall, and most of this has fallen at night. It is warm, growing weather, and our coldest nights are past. I look out on green grass, tall enough for the cattle to eat, on Daffodils in bloom (the paper-white Narcissi are mostly gone), on Camellias, and the large flowers of *Magnolia Soulangea*. I do not see many roses just now, for the wet weather has spoiled such as opened, but the bushes are full of small buds. Ripe Japanese persimmons are hanging on the trees in one direction, while in another are rows of heavily laden Orange and Lemon trees. This is California, January 22d, some thirty miles from San Francisco.

Now, if I were to advise those who expect to come to California to see the Midwinter Fair from a horticultural standpoint, I should certainly say that the citrus displays will be at their finest early in February. The northern and central counties of the state have already opened their exhibits, and the southern counties will be in line by the time this is printed. These displays include much more than the citrus fruits; one will see a large range of other fruits and vegetables from the extremes of the state and the five hundred miles between. Nevertheless, no one thinks of much besides the brilliant array of oranges, lemons, shaddocks, pomelos and other citrus fruits, in more than a hundred distinct varieties, and many species. Importers from Japan have not only the seedless Satsuma, or Unshin Orange-bearing trees in pots, but also the Kinokuni, a seedless hybrid from China, the Kunembo, and the round and oval Kinkan, or "Gooseberry Orange." The oval-fruited has long been popular in California gardens, with its spicy fruit the size of a Primordian plum; the round-fruited is more rare and higher priced. Citrus trifoliata is now so cheap and easily grown, as a stock for these interesting small oranges, of which an ornamental hedge can be made, that I am not surprised to note an increasing interest in all the Asiatic citrus fruits.

As the citrus display begins to languish, the Midwinter Fair will have a department of California wild flowers, admirably arranged and conducted, representing every part of the state, and thus, to some extent, varied seasons at different altitudes and with diverse exposures. The late slopes of Sierra cañons will make June days seem like April in the valleys. Not before the last of March, or even the middle of April, will the real wealth of the cultivated gardens of the region about San Francisco Bay reveal itself. So much depends upon the season, that I shall not attempt to fix the height of the Rose season further than to advise visitors to remember the closing days of April and the first days of May. It all depends on the district. Roses at San José are a fortnight earlier than at Oakland and Berkeley. The gardens within fifty miles of San Francisco can easily make the Fair notable for its Roses, day after day, for six or seven weeks.

Miles, Calif.

Charles H. Shinn.

Notes for Mushroom-eaters.—III.

GILL-BEARING FUNGI.

WE may now pass to the consideration of some of our principal edible and poisonous forms. The gill-bearing fungi, Agaricineæ, are divided by botanists into different groups, characterized by the color of the spores, namely: the white, the pink or salmon colored, the brown and the purple or black-spored groups. The Mushroom of commerce (Fig. 7), far more frequently eaten than any other species, naturally deserves notice in the first place. This species,



Fig. 7.—*Agaricus campestris* (the true Mushroom)—life-size.

Agaricus campestris, sometimes called *Pratella campestris*, belongs to the group with purple spores. It is often common in grassy places, as lawns and pastures, especially near the sea-shore, but seldom grows in the woods. It even grows in cities, and in Boston it appears in midsummer in the Public Garden and other squares. It may be recognized by the following marks: its color is white, usually with a shade of brown. The pileus is smooth, or, at the most, with insignificant scales. The stipe is solid, and near the upper part is a small ring, easily seen when fresh, but soon shriveling up. The gills, which should always be examined without fail, are, when very young, white, but they change at once to pinkish, and, when mature, to brownish-purple. The spores are purple, with a shade of brown. The general shape of the pileus is flat-convex.

Since cases of poisoning most frequently occur in consequence of mistaking some other species for *Agaricus campestris*, it is well to bear clearly in mind the principal marks which distinguish the species, namely: the change of color of the gills from pinkish to purple-brown, the purple spores, the solid stipe with a fixed ring near the top. The most nearly related species is the Horse-mushroom, *Agaricus arvensis*, which differs from the former in being larger and usually more shining white, having gills which retain the original white-color for a longer time, and then passing into a brownish-purple without the pink stage, and in having the stipe somewhat hollow when old. The most important botanical distinction is in the fact that in the Horse-mushroom the ring is not a single, but a double membrane, the outer being shorter and star-shaped and adhering closely to the inner. When in good condition the double ring is easily seen, but it often happens that the two membranes are not easily made out. There is no practical danger, however, since the Horse-mushroom is

also edible and about as good as the true mushroom, and, in fact, mushroom collectors, who select the largest mushrooms, not unfrequently gather the Horse-mushroom, and cannot tell it from the true mushroom.

The mistake that mushroom-gatherers make is that they select species which resemble the true mushroom in shape and the color of the pileus only, but neglect to look at the gills to see what their color is and the color of the spores, or whether there is a ring round the stipe, points far more important than the shape and color of the pileus. It is not very likely that one will find in the north-eastern states a poisonous species with purple spores which resembles so much the true mushroom as to be mistaken for it, but there are several species with white gills and white spores which have been mistaken for the true mushroom by careless persons. Of the white-gilled, white-spored species, several are very common and very poisonous, the most poisonous being *Agaricus phalloides*, *Ag. vernus* and *Ag. virosus*. Without attempting to give the minute characters by which botanists distinguish these three species from one another, it will suffice to say that all three are found in woods, *Ag. phalloides* (Fig. 8) being common, and they occasionally appear on the borders of lawns and pastures. They are generally shining white, but sometimes of a pale yellow color, and are as large as large mushrooms, with taller stipes and comparatively thinner pilei. They can immediately be distinguished from true mushrooms by their very white unchangeable gills. The stipes are at first solid, but soon become either entirely hollow, or there is a central soft

ous of all our fungi, the volva might be overlooked if one broke off the stipe above the ground, for it extends down to some little distance below the surface of the ground, and the volva may be buried as much as two inches under dead leaves in the soil, so that if the fungus is pulled up roughly the volva may be left behind. The species just named differs also from the true mushroom in the fact that when wet the surface of the pileus is viscid.

Nearly related to the white-spored species named above is *Ag. muscarius*, one of our commonest and most striking species. It abounds in woods, especially Pine-woods, and in pastures near woods, and is recognized by its brilliant red or yellow colored nearly flat pileus, which becomes much paler when old, over which are scattered, loosely attached, flocculent scales of a white or buff color. The gills, spores and stipe are pure white, and there is a large ring, but the volva, in this case, is not a membranous sac, but appears in the form of coarse scales attached to the bulbous base of the stipe. The species is poisonous, but not so much so as *Ag. phalloides*. Its bright color attracts small children of the age when green apples are considered a dainty, and they sometimes attempt to eat it. It has been claimed that this fungus is poisonous to the touch, but this is not true, nor is there any proof that persons have been poisoned by being in rooms where there are specimens of this species. The writer has frequently slept in rooms where the fungus was kept for the purpose of killing the flies which feed upon it, without being in the least affected.

To recapitulate. Unless one has had considerable experience he should avoid eating all those gill-bearing fungi which have white gills and white spores, and a volva of any kind at the base of the stipe. The royal agaric, *Ag. cæsareus*, which is much esteemed in some places, is not common in the north, where it is seldom eaten, although more abundant in the south. It closely resembles the poisonous *Ag. muscarius* in many respects, but the gills and stipe are yellow, not white, as in the last named, although, in both cases, the spores are white. It should also be borne in mind that the poisonous species with a volva prefer the woods, whereas the true mushroom prefers the fields.

Harvard College.

W. G. Farlow.

Foreign Correspondence.

London Letter.

SPRING has begun with us early again this year. Already, the first harbingers, the Christmas Roses, Snowdrops, Crocuses, *Eranthis hyemalis* and several species of Hellebore are in flower on our lawns and in the rock-garden. The Christmas Roses are a beautiful picture, covering a large space under the trees, in what is called the Wild garden, with crowded tufts of glistening white flowers. We have yet to realize the full value of this plant for producing broad effects in the outdoor garden. Last autumn many thousands of bulbs of Elwes' Snowdrop were dibbled into the lawns, and the charm of their myriads of nodding white bells on the green grass in the middle of January is as delightful as it is easy of production. I gathered the first Crocus—it was a blue *C. Imperati*—out-of-doors on the 16th instant. The cushion-like tufts of marbled leaves of the European Cyclamen are another charming picture at this time of year. This is another plant which may be relied upon to make a pretty garden-effect that will please, both of marbled foliage and rose-purple flowers. Here they are planted in large numbers among hardy Ferns on a piece of ground which is so shaded by



Fig. 8.—*Agaricus phalloides* (two-thirds natural size)—poisonous. V. Volva.

and flocculent pith. They all have well-marked rings, decidedly larger than in the mushroom, and the base of the stipe is surrounded by a bag-like envelope, the volva (Fig. 8). This last character is very important and should not be overlooked. In *A. phalloides*, probably the most danger-

ing picture at this time of year. This is another plant which may be relied upon to make a pretty garden-effect that will please, both of marbled foliage and rose-purple flowers. Here they are planted in large numbers among hardy Ferns on a piece of ground which is so shaded by

large Elms that grass would not grow there, but by planting it with the Ferns and Cyclamen it has become an interesting plot at all seasons. Trees and shrubs are being quickened into growth by the exceptionally mild sunny weather of the last week or so, and such early-flowering plants as the Hamamelis arborea, Daphne Mezereum, Lonicera Standishii, Rhododendron Nobleum and Nuttalia cerasiformis already are clothed with flowers that are precious at this season. The several varieties of Iris stylosa have not been out of flower since the end of November.

WILLOWS with bright-colored bark are a charming feature in the winter shrubbery here. Two varieties of *Salix vitellina* are particularly attractive at Kew. They are planted on the edge of an island in the middle of the lake, and the rich yellow color of the one and bright crimson of the other are most effective even from a long distance. I remember noting some years ago the red-barked Willow in winter in Birkenhead Park, where it is represented by large clumps about the ornamental water. The uses to which these plants may be put in garden-making are obvious. They are, at least, as attractive in winter as the Siberian Cornus, and they will grow in almost any situation. The best of them are *S. vitellina*, the golden-yellow Willow; *S. vitellina*, var. *Britzensis*, the blood-red Willow; *S. vitellina*, var. *rubra*, the Cardinal Willow, and *S. vitellina purpurea*.

STROBILANTHES DYERIANUS.—This plant has disappointed some cultivators because of its having lost the brilliant purplish hue of its leaves, which was very attractive on the young plants in summer, but which has changed to a dull gray-purple in winter. I believe it will only prove satisfactory as a foliage-plant when kept soft and growing. There are at Kew old plants which have lost all attraction, whereas young plants from autumn-struck cuttings are bright enough in color. I stated last year that this species would probably prove useful as a flowering plant in addition to its ornateness of leaf. It has lately flowered in the Cambridge Botanic Garden, producing simple axillary racemes about three inches long, clothed with green-tipped, white hairy bracts and tubular blue flowers. I saw a plant of it in flower at the St. Albans Nursery last spring with a terminal raceme only, and this was about nine inches long.

DRACENA THALIOIDES.—This is an interesting species of *Dracena* which was found by Gustav Mann when collecting for Kew on the west coast of tropical Africa about forty years ago, and was soon afterward introduced into the Belgian gardens. A figure of it was published by Morren in the *Belgique Horticole*, in 1860. It also bore the name of *D. Aubryana*. Plants of it are in cultivation at Kew, where it forms a healthy specimen a yard high and flowers annually. It is remarkable for its *Thalia*-like foliage, the leaves being glaucous green, semi-erect, over two feet long, the lower half narrow and petiole-like, the upper half lanceolate, two and a half inches wide at the base, narrowing upward to an acute point. The flowers, which are white, very narrow, and two inches long, are borne in crowded fascicles on an erect spike two feet long, and they open in batches. It is a striking plant, both when in flower and as a foliage-plant. It suckers freely.

AFRICAN ALOES.—A considerable number of species of *Aloe* are worth a place among conservatory and greenhouse plants which flower in winter. They are not grown in gardens now for no other reason, I believe, than because their beauty is unknown. In several of the Kew houses they have been an attraction for some weeks, their tall, often-branched spikes, clothed with tubular orange-red or crimson and yellow flowers, being as beautiful as anything to be seen at this time of year. Tall specimens, with stems from six to ten feet high, and others only a foot or so in height, bearing a crown of succulent green or mottled leaves, from the centre of which rises a spike of flowers suggestive of *Kniphofias*, or a glorified *Lachenalia*, are worth a place in any conservatory. The best of those in flower now are *A. arborescens*, *A. supralævis*, *A. Succo-*

trina, *A. Greenii*, *A. Lynchii*, *A. pluridens*, *A. tricolor*, *A. chloroleuca* and *A. platylepis*.

FREESIA REFRACTA ALBA.—This is a most useful winter-flowering plant for the conservatory, but it has not yet found general favor with cultivators here, as it seems to have done in America. A group of about fifty plants was shown this week from a garden near London; they were about two feet high, the spikes stiff, erect, well branched, and crowded with flowers which were good in substance, large, pure white, and, of course, deliciously scented. At Kew we grow a great number of pots of this plant for the conservatory, and they have been a delightful feature for the past month. Mixed with *Poinsettias* or *Centropogon Lucyanus*, they are all the more telling in effect. Although introduced from the Cape many years ago, it is only within the last twelve years that *Freesias* have attracted the attention of cultivators here, and it is chiefly owing to the efforts of Professor Michael Foster that their charm and usefulness have become known.

NEW HYBRID ORCHIDS.—*Phaio-Calanthe Arnoldiæ* is a new hybrid between *Phajus grandifolius* and *Calanthe Regnierii*, which was shown in flower by Messrs. F. Sander & Co. It has large, handsome yellow-brown flowers, partaking more of the *Phajus* than the *Calanthe*. It obtained an award of merit. *Dendrobium Hebe* and *D. Dido* were shown by Sir Trevor Lawrence, in whose garden they had been raised from a cross between *D. Findlayanum* and *D. Ainsworthii*. *Cypripedium Morganæ*, var. *Langleyense*, is a new hybrid raised by Messrs. J. Veitch & Sons in their Langley nurseries. It is interesting on account of its being the first hybrid in which *C. Stonei*, var. *platytænium*, is a parent, that and superbiens having been crossed by Mr. Seden. The hybrid possesses a good deal of the character of the precious form of *C. Stonei*, and differs from *C. Morganæ* in its broader petals. It was awarded a first-class certificate. *C. Adrastus*, a hybrid between *C. Boxalli* and *C. Lceanum*, received a similar award.

LELIA ANCEPS.—The richness and variety of this beautiful species were abundantly displayed in a large group of plants exhibited this week by Sander & Co. Every plant was well flowered and every flower was perfect. There were probably 250 flowers altogether, on some sixty spikes, and they were all forms of what is collectively known as *White Anceps*. All the best varieties were included, and, in addition, two new ones, named *Ashworthiana* and *Hollidayana*. These are said to be from a new district in Mexico, Orizaba, and, whatever their source, they are of superior merit, the flowers being large, with broad segments. *Ashworthiana* was snow-white, with pencilings of mauve on the lateral lobes of the labellum. It was awarded a first-class certificate. *Hollidayana* was pure white, with a crimson blotch on the front lobe, and crimson lines on the side lobes of the labellum. One plant of the variety *Sanderiana* bore no less than sixty expanded flowers.

London.

W. Watson.

New or Little-known Plants.

Pyrus Tschonoskii.

THIS interesting and handsome Japanese tree was first described by Maximowicz,* whose collector, Tschonoski, brought to him from the slopes of Fugisan a single fruit and a portion of a leaf, now preserved in the herbarium of the Imperial Botanic Garden at St. Petersburg. Nothing more was seen of it until Mr. J. H. Veitch and I encountered in the woods near Nikko a single tree of a *Pyrus*, which, by subsequent comparison with Tschonoski's specimen, proved to have been this tree. It is evidently rare, for I only saw it in two other localities—in the grounds of a temple near Nekatsu-gawa, where there was a single specimen, and in the woods at the head of the Ysui-toge, near Kamizawa, at the base of the volcano Asama-gawa, in central Hondo, where there were two or three trees.

* *Mél. Biol.*, xii., 265 (1873).

Pyrus Tschonoskii (see figure on page 55 of this issue), which is a Pear-tree, rather than an Apple as described by Maximowicz, is, as we saw it, a tree thirty to forty feet in height, with a trunk about a foot in diameter covered with smooth pale bark, and a narrow round-topped head. The branchlets are stout, terete and marked with small oblong or circular orange-colored lenticels; during their first summer they are red-brown, rather lustrous, covered with loose pale tomentum, and encircled at the base by the conspicuous ring-like scars left by the falling of the inner scales of the winter-buds; later they grow darker, and sometimes nearly black. The winter-buds are ovate,

oblique veins running to the principal teeth and connected by reticulate cross veinlets; they are borne on slender terete petioles an inch and a half in length. The flowers are unknown. The fruit, which is usually solitary, or is sometimes in clusters of two or three, is obovate, pointed at the base and crowned with the thickened and partly immersed calyx-lobes, which are triangular, obtuse and covered with a thick coat of dense white tomentum; it is an inch long, two-thirds of an inch broad, of a dull yellow color, and rosyrred on one side, with a thick skin covered with pale lenticels, and austere coarse granular flesh. The seed is a quarter of an inch long, obliquely obovate, acute at the base



Fig. 9.—*Pyrus Tschonoskii*.

obtuse, and rather less than a quarter of an inch long, and are covered with loosely imbricated chestnut-brown lustrous scales, tomentose above the middle and ciliate on the margins. The leaves are ovate, acuminate, unequally rounded or wedge-shaped at the base, and coarsely and unequally serrate with rigid glandular teeth, which are largest and most unequal above the middle of the leaf; they are thick and firm, dark green, lustrous and pilose on the upper surface, coated on the lower surface and on the petioles with thick pale, close tomentum, four to five inches long and two to three inches broad, with stout midribs impressed on the upper side, five or six pairs of conspicuous

and covered with a light red-brown shining coat. The fruit is borne on a stout rigid stem an inch to an inch and a half long and coated with pale loose tomentum, especially toward the much thickened apex.

Pyrus Tschonoskii is the only indigenous Pear-tree which has been discovered in Japan, where the continental *Pyrus Sinensis*, a common cultivated fruit-tree in all parts of the empire, has occasionally become naturalized.

We were fortunate in securing a supply of the ripe seeds of this tree, which may be expected to prove hardy in the northern states.

C. S. S.

Cultural Department.

Preservation of Soil Moisture by Tillage.

IN the January issue of that useful little quarterly, *The Strawberry Culturist*, Mr. J. H. Hale makes the following record of his experience as to the value of thorough cultivation as a means of stimulating the growth of Strawberries and other fruit-plants in a dry season.

In planting out about twenty-five acres of Strawberries last spring, we had exceedingly fine weather for the transplanting and one or two light rains after the plants were set out; then came nearly four months of extreme drought. Having no means for irrigation, the only way to keep the plants alive and stimulate a little growth, was constant cultivation; so, from one week's end to another, two horses and steel-frame cultivators were kept going, back and forth, among the rows; constantly stirring the soil in every field of berries, from two to four times each week. It came to be rather monotonous work, as there were no weeds to kill, and the average farm-hand does not see much sense in cultivation, except to kill weeds; but, as I was bound to encourage a growth of plants, the good work was kept up and the plants continued to make a light growth, while, in neighboring fields, where less cultivation was given, the plants made little or no growth, and, in many instances, on dry knolls, they withered and died.

Late in August favorable rains came, which continued through September, and the vigor which had been maintained in the plants by thorough culture throughout the drought enabled them to start off and make an enormous growth of runners, so as to mat the ground thickly with new plants before the coming of winter, and, I am satisfied, that the months of cultivation, which cost us, perhaps, three hundred dollars, has made us at least three million plants, and will enable us to supply our customers as usual next season and have abundant beds for fruiting.

Liberal manuring is an essential to successful Strawberry-culture, but constant stirring of the ground is even more essential. As noted this season, it is worth ten times its cost in seasons of drought, and at any time pays well, for the more completely the particles of earth are pulverized the more plant-food will become available for the plants.

The same practice will apply to all fruit-plants, and I noticed it particularly in the Peach orchards the present season; where the most thorough tillage had been given the trees suffered least from drought, and the fruit was of larger size and better quality than in the orchards where it was not possible to keep the cultivators at work after the growing fruit had so weighed down the limbs that it was impossible to work among the trees. In the cultivated lands the fruit kept on growing all through the season, but in the uncultivated orchards it was at a standstill for six weeks, until the rains came. This taught us the second lesson in the value of cultivation.

The Snow Creeper of India.

MR. WATSON'S note on page 35 of the issue of GARDEN AND FOREST for January 24th pleasantly renews my recollections of this lovely creeper. It is interesting to learn from such a high authority as Mr. C. B. Clarke that the specific name is *racemosa*. It is generally known in India as *Porana paniculata*, and Mr. Woodrow, lecturer on botany at Poona, whom I met at the Taj Mahal Gardens, called it *P. volubilis*, and had so named it in his book on *Gardening in India*. It is undoubtedly a plant that succeeds best in an exceedingly dry and hot climate. It grew and flowered fairly well in the Taj Mahal Gardens, where the soil is irrigated all through the dry season; but I found that it flourished far better at Rambagh, another Agra garden, where the only moisture it received was the annual twenty-five inches of rain that falls from June to September. There was a wall about fifty yards long by ten feet high, against which a number of plants had been planted, and the growth was so rampant that it had frequently to be thinned back to keep it within bounds. The wall was completely covered with the foliage, and during September and October it was draped with an unbroken mass of dazzling white panicles that hung like drooping folds of finely worked lace. People who are familiar with the large flaccid corollas of the Morning-glories and other Convolvulaceae plants that are common in gardens, would not, at first sight, be apt to class the minute-flowered *Porana* in its family group.

Like many other plants peculiar to dry districts, it is, no doubt, difficult to grow under artificial conditions as a stove-plant; but we are all so familiar with the wonderful adapta-

bility of plants to seemingly unnatural conditions that I think it might be well worth a trial, care being taken not to over-water it from October to May. It stands well when cut for table decoration, it flowers with wonderful freeness, and is decidedly one of the most striking creepers that grow in the north-west provinces of India.

Manchester, Mass.

A. B. Westland.

Seasonable Notes on Vegetables.

ALTHOUGH several weeks must elapse before anything in the way of planting or seed-sowing can be done in the vegetable garden, there is some preparatory work which ought not to be delayed until the rushing spring season. When the ground is frozen hard and clear of snow, manure may be wheeled on to the beds to advantage, for if this work is left until the frost breaks, the heavy nature of the ground will make hard wheeling, not to speak of the cutting up of roads and grounds which it will cause. Such work is really done best in autumn, at which time the ground should be manured and dug over, with the surface left rough, to enable the frost to penetrate more rapidly and pulverize it. A vegetable garden trenched, plowed or spaded in the fall, has a more presentable appearance than one covered with weeds and decayed vegetables, and it is better in every way than one left untouched until the advance of spring makes it necessary to do this work, and often to do it in too much of a hurry.

Comparatively few private establishments have structures specially set apart for growing vegetables, although, beyond question, such houses offer many advantages. Where this convenience is not available the hot-bed is a necessity, and no time should be lost in preparing one for early Lettuce. For a gentle as well as a lasting heat nothing is better than warm stable-manure and leaves in about equal proportions, thrown into a heap and turned over once or twice. At this season not less than three feet of fermenting material should be put into the beds, and it should be covered with a couple of barrow-loads of rotted manure and one of loam to each sash. Four or five days will suffice to warm through the mass, when the plants may be set out at the rate of forty to fifty to a sash. The beds should be ventilated freely every mild day and a small crevice should be left at each sash at night to allow the escape of any steam. A temperature of fifty degrees is high enough in the morning, and a greater degree of heat will inevitably cause the plants to damp off. Of course, the frames must be well matted and shuttered on cold nights. Of several hundred Lettuce-plants wintered here in cold-frames, from seed sown in September, the white-seeded Tennis Ball and Hittinger's Forcing have proved the most serviceable. In the Lettuce beds a sowing of Scarlet Turnip and French Breakfast Radish, which are quick-growing kinds, can be made.

Cauliflower and Cabbage plants, in cold-frames, must have abundant air at every available opportunity, and the sash should not be left covered with snow too long, as the plants will become blanched and spindling and will not be able to endure any freezing. Sowings can now be made in the cold-house of Jersey Wakefield Cabbage and of Snowball and Kronk's Erfurt Cauliflower. Sowing of Celery for early use is now seasonable, and I have found no better variety than the Golden Self-Blanching for this purpose. Parsley, which is wintered indoors or in a cold-frame, will run to seed as the season grows warmer, and a sowing may now be made in small pots to be transferred to a cold-frame or the open ground later on. Chappel's Matchless and Emerald are good kinds.

About the middle of February a few Cucumbers may be started for setting out in hot-beds a month later. The pots containing the seeds should be set in sharp bottom-heat and covered until they germinate. With the first rough leaf the plants should be transferred to three-inch pots, replunged in heat and shifted later into larger pots before the roots become bound. White Spine, Telegraph, and Tender and True are all good kinds for forcing, either in hot-beds or in a warm house. Sowing of the Early Edmand's Beet may now be made in boxes, and seedlings, if transplanted to a general hot-bed when they are large enough to handle, ensures an early crop. Plants pricked out in the open ground toward the end of April will be ready for use a month ahead of those sown out-of-doors. This is a good time, too, to make a sowing of Tomatoes, and when the plants are large enough to set out the weather will be sufficiently warm for them to fruit successfully in a Carnation-house or other cool structure, either in pots or in a bed. If properly trimmed they will interfere little with other plants in the house and will fruit freely until the fruit outdoors is ripe. Conference, a variety certificated by the Royal Horticultural Society of England, Sutton's Perfection

and Nicholson's Hybrid are all good varieties. Sutton's Perfection is handsome, and we shall plant it for future trial, but Nicholson's Hybrid sets its small fruit much more freely, and, so far, is the best variety we have ever tried for indoor cultivation.

Taunton, Mass.

W. N. Craig.

Notes on Anthuriums.

THIS elegant family of stove decorative plants is a distinct class, and when seen in good condition, either as exhibition specimens or for home decoration, are always admired. Those of the Andreanum and Ferrierense types are remarkable for the brilliant colors of their spathes; while those of the Crystallinum Warocqueana and Grande types are distinguished for the rich coloring and massiveness of their foliage. Being natives of tropical America, they must be treated to genial warmth in this northern latitude. They can hardly be considered a difficult class of plants to grow; with a stove-house where a winter temperature of fifty-five to sixty degrees is maintained during cold weather at nights, and the usual rise of ten degrees or more by day, according to the amount of sunshine, any one may reasonably expect to succeed with them. The summer temperature, of course, will be considerably higher, approaching that of the tropics.

The Anthuriums, as a class, are quite particular about the material in which they are rooted, and they require a sweet, fresh compost which is not liable to become water-logged or sour. If, by any mischance, the compost gets in bad condition the roots of the plants are nearly always found dead, with only a few living ones near the surface of the pot. In potting Anthuriums, the compost which I have found most suitable is a mixture of fresh sphagnum moss and sun-dried cow-manure, such as can be found in a pasture. It should never be collected if not thoroughly dried, unless with the intention of drying it artificially for future use. To about three parts of sphagnum I add one of the dried cow-manure, with broken crock or small lumps of charcoal, to give it a porous character. This compost remains fresh and good longer than a general mixture of fibrous loam, peat and flaky leaf-mold, although I have used the latter to good advantage when the dried manure was not procurable. The purpose is to get a good coarse compost, one that the water will pass through without leaving the soil sodden and acid. Nothing of a fine texture, like ordinary potting soil or sifted leaf-mold, should be used.

In potting, ample shifts should always be given, for the plants root very freely and ramify in every direction. They are undoubtedly surface-rooting subjects in their native habitat, and subsist on the thin upper layer of such decaying matter as fallen leaves, mosses, etc.

Again, liquid-manure cannot be used with Anthuriums to any advantage, nor, indeed, any kind of fertilizers. Once they are pot-bound nothing seems to put vigor into them but repotting in fresh material, when they generally start off with good strength. Plenty of drainage should be used, and the surface of the compost should be built up above the rim of the pot some two or three inches and packed quite firm. They should always be kept moist in summer and winter. It is a mistake to subject them to any drying-off process, with the idea of giving them rest. This is detrimental, as the roots seem always active.

Anthuriums should be shaded when the sun is bright to save the foliage from burning or turning yellow and sickly. The leaves being large and soft, they are easily injured by the heat of the summer sun.

Old specimen pieces whose constitution has been weakened can easily be divided and potted up again, using one or more crowns to a pot, according to the discretion of the grower. January, February and March are good months for this work, as it allows the plants time to make nice pieces by autumn. After breaking up the pieces they must be kept a trifle warmer, if possible, in a moist atmosphere to excite root-action. This can also be done during the summer months, but not so successfully, because root-action is more vigorous at the beginning of the year, even in exotics of this class.

Many new seedlings, with spathes of striking color, have been produced within a few years, showing that a greater interest is being taken in these plants. Anthurium Andreanum and A. Ferrierense have held the lead quite easily, but new varieties are becoming common. Brownii is a rich dark variety; Albanense is claimed to be the finest colored seedling of the Andreanum and Ferrierense hybrids, and several English firms are offering new varieties.

Pittsfield, Mass.

A. P. Meredith.

[At the exhibition held in Madison Square Garden in the

spring of 1893 certificates were awarded to two seedlings exhibited by Mr. Meredith. The spathes were finely glazed and of a rich tint which might have been called dark blood color. One of them was shown under the name of Anthurium Cuttingianum, in compliment to Colonel Walter Cutting, of Pittsfield. We believe that it is not yet in commerce.—Ed.]

Greenhouse Work.

THE busy period of spring potting and seed-sowing is rapidly approaching, and it is good practice at this time to get a quantity of soil ready for use, so that it may be in proper condition when it is wanted. Loam, leaf-mold and sand are the basis of our potting composts, with ground bone added for all such plants as are to remain in pots for a long period, as, for example, those that are potted annually. Hard-wooded plants do not like bone in the soil, and when potting Azaleas, Ericas, Boronias, greenhouse Rhododendrons and plants of like nature a separate compost is made up. It is a safe rule to follow, that plants of strong root-action need more loam and less leaf-mold, and vice versa.

Of the stock of Amaryllis all that are starting have been repotted, as also all the seedlings of the past year. Those that are still dormant are left until later, so as to provide a succession of bloom. The Amaryllis which are evergreen do not need so decided a period of rest as the deciduous varieties; this is the best time to repot these before root-growth commences.

Gloxinias have now started. The largest plants should be potted on, to be followed later by other plants as they require it. The worst enemy of the Gloxinia is thrips; where these get a footing all chance of bloom is lost, and the trouble is often unsuspected until too late to remedy it the same season. The white Orchid-thrips are the worst to get rid of. Continued fumigation sometimes proves a remedy, but this cannot be done after the flowers open, or some of them will be spoiled. We intend this season to dust the plants frequently with tobacco-powder during the earlier stages of growth.

In a few days we shall begin to pot all the warm-house plants. Crotons, Dracenas, Marantas and other foliage-plants will all be looked over, cleaned when this is necessary, and repotted. When this work in the warm-house is finished it will be time to begin to pot the plants in the cool-house. These are better potted on a month later, as growth does not begin as early as it does in the warmer house. Where Nepenthes are grown, and they have ceased to produce pitchers on the last-made leaves, the plants must be cut down to within an inch or two of the base. If less water is applied for a week or two, new growths will soon start, and these will develop their characteristic pitchers. If the soil is in poor condition the plants should be shaken out and potted in a compost of sphagnum-moss and fern-root. A mixture such as is used for Cypripediums is best for them. Cuttings of Nepenthes may be rooted in a brisk bottom-heat if they are taken off at this time and put in small pots, with moss and fern-root tied round the base of the cutting to keep it firm. From two to three months are usually required to establish the roots, and after this the plants grow rapidly.

Young Cyclamens from seed sown last fall should now be large enough to pot off into small pots. The smaller the pots, the better to start with, for Cyclamens are very impatient of overpotting at any season, and more especially at this time of year. The soil should be made porous, and plenty of sand must be added or a little powdered charcoal. Charcoal is always a desirable addition to potting-soil, or soil for seed-sowing, as it keeps it both sweet and loose. Old bulbs of Cyclamen when past flowering should not be dried off. This is sometimes done to the great injury of the bulbs for the next season's use. They may be placed under the benches, not altogether out of sight, and water must be supplied as long as the leaves remain. In spring a cold frame will suit them well. If leaf-mold is sifted over them so that the spaces between the pots are filled up, and about an inch of soil put over the bulbs themselves, little water will be needed, but in wet weather the sashes must be put on. By June some of the bulbs will have started, and these may be taken out and potted, and the remaining ones treated likewise as soon as they start to grow. We have had good success with old Cyclamen-plants under this treatment.

A very useful plant to have in small pots is Asparagus tenuissimus. This species roots easily from cuttings. It is a good time to put them in now, and they will be rooted in about six weeks. A. plumosus will not root from cuttings, but must be

obtained from seeds or layers. When the latter plan is adopted, care must be taken to let the end of the shoot remain out of the ground to continue growing; young plants will then start from each of the branches along the stem.

South Lancaster, Mass.

E. O. Orpet.

Correspondence.

Misconception as to Forest-growth.

To the Editor of GARDEN AND FOREST:

Sir,—The last thing I should attempt to do would be to say a word in discouragement of honest efforts to arouse our people, and especially our farmers, to the importance of the art and science of forestry. It has been a subject of interest to me from boyhood, and all my life I have been planting trees. Nevertheless, I have thought that some writers upon forestry have a tendency toward extreme statement, which really may injure the cause they are trying to advance. One would think, from their statements, that a tree once cut down could never be replaced; or, at least, not for centuries. The impression is given that our forest-trees grow much more slowly than they really do, and also that second-growth trees are of very small account as timber.

Yet, while I am sure that the study of scientific forestry should be made an important part of the curriculum of every agricultural school, and should also have a conspicuous place in agricultural literature and journalism, I can but deprecate the impressions which are produced, to the effect that we are losing forever all our best timber, and that it cannot be reproduced at any moderate cost. The impression is often given that centuries are required to produce timber of any real value. Such a belief is far from true. Here, in the latest settled portions of Vermont, we can show, upon what were wheat-fields sixty years ago, as handsome Sugar-maples, trees as large and sound as those still standing in the untouched forest. And this is not alone true of the Sugar-maples. Good timber of other native varieties is being reproduced with noticeable rapidity. I have on my own farm Canoe Birches, sixty to seventy feet high, and a foot to eighteen inches diameter, straight and handsome, which cannot be more than forty to fifty years old.

My father, were he now alive, would be about ninety years old; and last year I was examining a considerable number of trees planted by him between 1828 and 1840. Among them are Horse-chestnuts sixty feet high, and from twenty to twenty-four inches in diameter six feet from the ground, together, with Maples and Elms, but slightly less in their dimensions. Trees set by myself, since the close of the war, are, in numerous instances, over a foot in diameter; and I have Butternuts, grown from seed, planted much later, which have been fruiting abundantly for six or seven years.

I was led to take up the subject just at this time by reading, in a bound volume of *The Vermont Farmer* for 1871, a report of a meeting of a farmers' club in Caledonia County, in this state, from which I make the following extracts to show the views held by practical tillers of the soil more than twenty years ago:

J. P. Foster said: "I would have all rocky places reset with trees. I planted Maples in Waterford twenty-five years ago that have been used for sugar-making for several years. Cedar (*Arbor-vitæ*) can be grown on rough upland that is dry and hard, with very little expense; it is becoming valuable."

John Bacon said: "What better legacy to leave to our children than fruit trees planted with our own hands? And what of forest-trees? One of my neighbors has now a good Sugar-bush on land once cleared, and the men are yet living who harvested from it a good crop of wheat. In New Hampshire I knew a piece of land when it grew a good crop of corn, which now carries forty cords of wood to the acre."

B. P. Brown said: "I came to what is now Passumpsic fifty-five years ago. I then planted two Maple-trees that are now nearly two feet in diameter. I would say, encourage your boys and girls to plant trees. I feel better for planting those trees."

O. G. Harvey: "I believe that forest-trees can be grown at a profit. White Pine on light soil, worth next to nothing for cultivation, could be planted at little expense, and in thirty years would be more valuable than the average tillage-land of our farms. Some fifty years ago my father sowed land to wheat which afterward grew to wood. Twenty years after we cut ten cords to the acre, leaving the best. It has been thinned twice since, and there are now twenty cords per acre upon it of good growing wood."

Andrew Warden: "Some two years ago, while passing over the road near the mouth of Ives' Brook, in Barnet, in company

with Mr. James Ferguson, who is now over one hundred years old, he said: 'Andrew, I helped to reap wheat where those Pines stand, seventy-five years ago.' Now those Pines are two to three feet in diameter, and would cut from 40,000 to 50,000 feet of lumber to the acre."

I send you these notes to show that our New England farmers are not, and for many years have not been, indifferent to forestry matters. They need instruction in forestry, without doubt; but it is plain that they are by no means totally ignorant or indifferent as regards the great questions involved in the care of our forests. It may be said with truth that nearly all our best farmers are intelligently interested in a proper care and preservation and increase of our woodlands.

Newport, Vt.

T. H. Hoskins.

Protecting Orange-groves from Frost.

To the Editor of GARDEN AND FOREST:

Sir,—On page 30 of issue of GARDEN AND FOREST for January 17th an account is given of the means employed to counteract the effect of the late "freeze" in southern California. Another method was used by my son on his ranches at Riverside. On Saturday night the thermometer fell to twenty-six degrees, and on Sunday night to twenty-eight degrees. He kept the water running through his groves throughout these nights. The temperature of the water when drawn from the flume was fifty-six degrees; when drawn off after flooding the ranches it was thirty-six degrees. Out of twenty oranges removed from the trees and tested, but two showed signs of having been touched by the frost.

Boston, Mass.

James C. White.

Meetings of Societies.

The Western New York Horticultural Society.—II.

PRESERVATION OF FRUIT.

PROFESSOR CALDWELL, of Cornell University, began an address on this subject with a concise account of the chemical changes which go on in fruit to ripen it. These same agencies keep at work in the ripe fruit, and when it is already at its best the only change they can bring about is to make it poorer. Besides this, there are armies of living organisms which are ready to start decay wherever there is a weak or broken skin. These organisms, friends of the farmer or gardener in a great many instances, are enemies which he must fight all the time if he keeps his milk or fruit from spoiling. Concerning these bacteria, Dr. Caldwell went on to say:

Nothing is safe from them, for the dust of the air is charged with them; and they are always ready to begin work afresh whenever, as they are borne hither and thither by currents of air, they settle down on any dead vegetable or animal matter. Fruit, when separated from its vine or shrub or tree, becomes dead vegetable matter, and therefore is open to the attacks of these unfriendly bacteria.

In a museum, on a holiday, when a large number of people were moving about, the number of bacteria falling on a square foot in a minute was found by an English chemist to be 1,750. To satisfy my curiosity as to the number of these little people likely to be found on fruit as usually exposed, I asked one of my students to find out for me how many bacteria there were on an apple, about as big as my fist, which I took from a basket of the fruit that had recently been left in my cellar by the grocer. He reported 115,000; quite a good-sized city on a very small piece of land, one would say, and yet not much more thickly settled than a western prairie, since it would take 400,000,000 of these beings to cover one square inch of surface.

But they were there, nevertheless, ready for work whenever a place should be opened or weakened in the skin, where they might begin. Beset, then, as ripe fruit is from within so that it cannot grow better, but must grow poorer, if it changes at all, and beset with worse enemies from without, is it any wonder that the soft, ripe strawberry or blackberry or peach, or the mellow apple or pear, is hard to keep? There is but one really effectual and practicable way to meet this double evil tendency, and that is to heat the fruit to the temperature of boiling water; thus all power for evil of the ferments working within and of the bacteria without is permanently taken from them, and we have only to prevent exposure to air completely, so that no fresh bacteria-dust can come in contact with the fruit. This is the familiar process of canning fruit. Complete drying also stops the action of the ferments and bacteria

as effectually as heat; but really complete drying, leaving no moisture at all in the fruit, would yield a product so unlike the original fruit that it would have little value; and if the drying is not complete, as in the evaporated apple, we must resort to such means as cold storage to carry the fruit through the next warm season. The low temperature itself checks the tendency to decay, for ferments and bacteria do not work well in the cold, and the latter not at all at very low temperatures, but there is a limit at which the fruit is spoiled by the cold itself, and this, therefore, is but an imperfect means of preservation. Finally, there are certain chemical substances, like borax, boric acid, salicylic acid, sulphurous acid, which act as poisons on bacteria; but as they can be applied to fresh fruits only in such a way that harm would come to those who eat them, their use is out of the question in such cases.

Therefore it is, that if we want to enjoy all the lusciousness of the ripe fruit, we must usually eat that fruit just when it is ripe; canned or dried it may be good still, but it is quite another thing; cold storage may preserve the lusciousness for a while, but not for long. Especially is this true of the berry fruits which have no protecting skin to defend them from the attacks of bacteria and consequent decay. The only way of preserving these tender fruits in a condition at all approaching that when they were picked is by canning, so that we are at least reminded of what they were when fresh, as they come upon our tables in winter. This is a perfectly wholesome way of preserving fruit, when honestly done; and an entirely successful way, so far as keeping the fruit in an eatable condition for an indefinite length of time is concerned. But there are temptations not to do it honestly, and the product dishonestly obtained may sometimes deserve severe condemnation.

The complete success of canning fruit, as to the mere matter of preserving it from molding and decay, requires that the contents of the can shall be heated throughout to a temperature at least nearly as high as boiling water; to do this takes time and care. If a little salicylic acid is added to the contents of the can it will assist the action of heat in killing all germs, and the heating need not be quite so thorough. But such an addition is not honest. The use of salicylic acid in wine has been prohibited in Europe, because, while small quantities added may do no harm, there is no guarantee that it may not be used to excess. It is not harmless when taken into the system. Fruit properly canned without it will keep perfectly; fruit improperly canned, or poor fruit canned in any way, may keep with its aid, and not without; and the more careless and slovenly the selection and preparation of the fruit, and the heating and sealing of it, the more freely must the preservative be added, to keep it from decay. Salicylic acid is widely used in this country in canning vegetables and tomatoes; probably it is also used in canning fruits.

Then we have two kinds of tin-plate—the "bright" and the "terne." The latter contains much more lead than the former. In Germany the law requires that tin-plate used for canning foods shall not contain over one per cent. of lead. In the chemical laboratory of the Department of Agriculture, at Washington, the tin of fifty cans, in which peas had been put up, was examined for lead; thirty of these were found to contain from one-half up to thirteen per cent. of this poisonous metal. Then, again, solder, rich in lead, is easier to handle than if poor in lead; in Germany, cannerymen are prohibited from using solder with more than ten per cent. of lead in it. The solder of twenty-four cans, examined in the laboratory above mentioned, was found to contain from forty-three to sixty-five per cent. of lead. There is no question but that the use of lead, or of materials containing much lead, that are to come in contact with articles of food, and especially of acid food, is to be strongly condemned. It is possible that the poorer the quality of the materials coming in contact with alloys rich in lead, the greater the danger of getting some of the lead, and of the tin also, into the contents of the cans.

In respect to the drying of fruit, we have again a temptation to depart from scrupulous honesty in sulphuring to an excessive extent. Dr. Hilgard, Director of the California Experiment Station, does not believe in the bleaching, any way, and calls the handsome, light-colored slices of dried apple "whitened sepulchres." He believes that this sulphuring may be used to cover up dirty and damaged fruit, and that fruit excessively sulphured is less digestible, because it contains so much of this antiseptic; for all antiseptics, whether borax, salicylic acid or sulphites, are unfavorable to digestion when taken into the stomach, with the food. All fruit when dried in the air darkens, owing to the action of the oxygen of the air upon certain constituents of the fruit; and he thinks that this coloration "should be looked for by every consumer as the natural mark of an honest, unmanipulated article." In all this I am inclined to agree with him. At any rate, all

honest men will agree that only clean and perfect fruit which needs no manipulations to cover up defects should be dried. All will agree that any manipulation which can cover up defects has its dangers, and that an extensive trade in any article may be seriously damaged by dishonest practice; and that in such cases many honest people suffer for the misdeeds of a very few rascals. Even carelessness may bring about the same result. Fruit dryers became careless in the use of the zinc trays in their evaporators, and zinc got into the dried fruit that went to Germany. It may and it may not be, that the German Government at that time wanted an excuse for putting some obstacle in the way of the importation of so much fruit, and pounced upon this occurrence of zinc in it as a pretext. But at any rate, if the zinc had not been there, the chances are that they would not have been able, on any other pretext, to hurt the trade so much as they did.

But the public has acquired a perverted taste, and demands the "whitened sepulchres"; so till the public taste can be reformed, business must conform to it. But let this be done honestly, by using only the best material, and only just so much sulphuring as is necessary to bleach it to the desired point. Mr. Green, of the Ohio Experiment Station, states that some varieties of apples, such as the Fameuse, need no sulphuring in order to get a white evaporated product, and he would never use sulphur in the evaporator itself; he would merely expose the fruit to the fumes for a short time, when prepared for the drying—that is, he would use it, not to bleach out a dark color already formed, but to prevent any discoloration.

Concerning the preservation of fresh fruit, a rather singular method is proposed by Monclar, in a recent volume of the French *Journal d'Agriculture Pratique*. It consists simply in bedding the fruit in lime. He gives the following general statement of the results of his experiments:

(1) The lime does not in the least attack the skin of the fruit, even after prolonged contact. (2) The fruit does not dry any more in the lime than in the air. (3) No change takes place in the fruit other than such as is the natural consequence of its evolution.

This method was tested on oranges, artichokes, cherries, gooseberries, prunes, tomatoes, onions, potatoes, grapes, apples, pears, sugar-beets, and chestnuts with their shells removed. There was certainly no lack of variety in the material used. Not every test was successful. Tomatoes kept well for two weeks, and half of them for nearly five weeks. In another trial, tomatoes picked before fully ripe, in order to save them from an early frost, and put in lime on October 22d, were good till January 15th. Pears, of a variety that he had been unable to keep beyond December in any other way, kept well in lime till the middle of April. The most interesting results, and it seems to me the most striking, were obtained with grapes. Three varieties were packed in lime on September 13th; the first examination of them was made December 22d, when all were in good condition; April 15th two bunches of one variety were taken out, one of which was fairly well preserved, the other very well; all of one of the other varieties were in a bad condition and were removed. On May 2d the box was emptied, and all of those still remaining were in excellent condition. In another trial made in the preceding year, the last bunch of grapes in the box was taken out July 1st, when half of the berries were well preserved and had an exquisite flavor.

MR. HALE'S ADDRESS.

Mr. J. H. Hale, of Connecticut, furnished a good many practical suggestions on various subjects connected with horticulture. He believes that the tendency to grow cheap products and to slight horticultural work is due to some extent to cheap nursery stock. Men usually give attention to trees in proportion to their estimated value, and one which costs a cent is of less account to a planter than another which costs five times as much. Nurserymen ought to charge enough for their stock to pay a reasonable profit and to make their stock better than much which is now sold. Among the lessons which Mr. Hale has learned last year were: (1) that frequent surface cultivation is the best security against the injurious effects of drought and poorly cultivated orchards; (2) that workingmen, and what are known as the middle classes, rather than the wealthy, are the best patrons of the fruit-grower; and (3) that fruit should be widely distributed in local markets for the best commercial returns. He condemned ventilated crates for berry-fruits, and says that such fruits always keep longest when picked dry and cool, and then packed in very tight crates. This view was confirmed by the chemists at the meeting, who stated that in the process of decay fruit uses oxygen and gives off carbonic acid gas, and if the air, with its oxygen, is excluded the ripening will be checked. This view was also

corroborated by the experience of Mr. George T. Powell in his berry shipments to the World's Fair. Mr. Hale argues that more intelligent care should be devoted to the cultivation of apples. It is the opinion of good judges that apples are too much neglected and that new orchards are not being planted with sufficient rapidity to take the places of old ones and keep pace with the increasing demands. Apples are coming to be less common, even in northern markets, than oranges.

The sum of the discussions about spraying was that it cannot be relied upon as a complete remedy for the curculio in stone-fruits; that the Vermorel nozzles are the best for general purposes; that the Bordeaux mixture of half the strength of the original formula is the best general fungicide. The experiments of Professor Beach in preventing the cracking of Seckel and White Doyenne pears, Mr. Waite's success in annihilating Pear-leaf blight, and Mr. Lodeman's experiments in checking the apple-scab on fruit and foliage, were noted as the leading recent achievements in the spraying of orchards.

Notes.

Fifteen million spools were made last year by a single company in Michigan.

The *Rural New Yorker* commends Nott's Excelsior Pea as the best of the dwarf varieties. The plants grow twenty inches tall, with abundant and vigorous foliage, and they are more prolific than American Wonder or Little Gem, being as early as the first-named variety and of the same quality.

The delicate little sweet-scented flowers of *Chionanthus fragrans* are already open out-of-doors in latitudes south of Philadelphia. As its specific name shows, the flowers of this shrub are noted for the penetrating and yet delicate quality of its perfume. A few sprays of it will scent the air of a large room.

A correspondent of *Science* writes that there is a variety of *Nymphaea odorata* growing in a mill-pond at Hyannis Port, Massachusetts, which is an exact copy of the type, except that it is in miniature. Flowers of this little Water-lily are only half an inch in diameter, and the leaves, while they are perfect in shape, color and venation, are only an inch and a half across.

Not long ago we noted the fact that Coe's Late Red plums, from California, in fair condition, were selling at midwinter on the fruit-stands in this city. We now learn from the *Grocers' Review*, of London, that these plums were on sale during the holiday season in Glasgow, having been shipped thither from New York, where they caused much favorable comment on account of their freshness, beauty and flavor.

In last week's issue, in an account of Professor Beach's experiments quoted on page 49, the removal of a decimal point one place to the left divided by ten the increased value of the fruit on Pear-trees that were sprayed for scab over those that were not treated. This means that the gain in the value of the marketed fruit to every hundred trees, over all expenses, was \$423, instead of \$42, in one case, and \$562, instead of \$56, in the other.

An English horticultural journal speaks in high praise of *Linum flavum* as a plant for winter bloom in the cool-house. Some of these plants in flower in the show-house of the Birmingham Botanical Gardens are said to be very effective among *Bouvardias*, *Cyclamens*, *Cinerarias* and other plants. It may be added that this is one of the very best of winter-flowering plants for window-culture, as it requires little special care and furnishes flowers of a beautiful yellow, a color which is highly appreciated at this season.

Under the name of *Gyrophora esculenta*, the edible Lichen of Japan, known as *Iwatake*, is described in the *Botanisches Centralblatt*. The commercial value of this Lichen is due to the great amount of starch and some gelatinous substance which it contains, which give it a value in cookery. It is extensively used in Japan as a condiment, as it has a pleasant flavor. In some parts of the island, especially in the mountain districts, it completely covers the moist granite rocks. It is dried and sold in this state in the towns, and large quantities are annually exported.

A Chicago correspondent of the *American Florist* speaks in high terms of the pink Carnation, Madame Diaz Albertini. The flowers have a rather deeper color than those of Day-break; they are very large and double, of perfect shape, and have no tendency to burst the calyx. The stems are very strong, which is an important point when we consider the

extra weight of the flower. Mr. J. T. Anthony considers this one of the very best varieties for those who sell flowers of extra quality, for although the plant does not bear so abundantly as some other pink varieties, as, for example, William Scott and Mrs. Elizabeth Reynolds, they always bring high prices and command \$1.00 a dozen when the commoner sorts sell for fifty cents. The flower is specially fragrant.

The *Saw-mill Gazette* gives the following illustration of the amount of timber which is wasted in sawdust, a waste which seems slight when one observes the cutting of a few logs into plank, but which amounts to an immense loss when we consider the number of mills at work all over the country. If a fourteen-inch log is to be converted into boards five-eighths of an inch thick, twenty boards can be sawed from the log, if the saw cuts but one-sixteenth of an inch between each plank. Eighteen boards can be made if one-eighth of an inch is sawed away, and if three-sixteenths are lost, only seventeen boards will be obtained. That is, the loss in the first case is nine per cent., in the second seventeen per cent., and in the third twenty-three per cent. of the timber. If the log is twelve feet long the waste in sawdust will range from one and one-half cubic feet to nearly four cubic feet, and a single saw-frame, which cuts up fifty logs a day and works 250 days in a year, would convert from 20,000 to nearly 50,000 cubic feet of timber into sawdust every year. This large amount at twenty-five cents a cubic foot, which is a fair average for pine, will represent in money \$12,287. Thin saw-blades, with carefully sharpened teeth, are therefore great factors in saving material, and every year the need for such saving is becoming more urgent.

During the festivities which precede the Lenten season there has been a brisk demand here for flowers of good quality. Among roses, Meteors, Catherine Mermets, Brides and Bridesmaids, with long stems and luxuriant foliage, are worth six dollars a dozen, and American Beauties have sold from fifty cents to a dollar and a half each for exceptionally well-grown flowers. Although there is a temporary scarcity of violets, they have been so abundant until the past few days that the price has fallen. Beautiful and fragrant sprays of orange-blossoms are for sale in several of the stores, not only for use at wedding ceremonies, but to meet the demand of residents from the south, who hold them in regard for association's sake. The supply is irregular, and the price uncertain, a bunch of four or five small sprays now commanding two dollars. Roman hyacinths are beginning to be replaced by the flowers of the Dutch hyacinths, and pink tulips are in special favor. The carnation, Storm King, still sells here at the highest price. The new striped variety, Helen Keller, which seems to have made a furore in some other cities, has not proved so captivating here, and sells at the price of other good carnations, seventy-five cents a dozen. Among the shrubs which have been forced into flower, *Deutzia gracilis* is by far the most abundant, and a bunch of a few small sprays brings seventy-five cents. Jonquils are worth a dollar a dozen, and beautiful freesias cost only fifty cents for twenty-five sprays.

Among the foreign vegetables in our markets now is cabbage from Denmark, which sells wholesale for ten dollars a hundred heads. These heads are much more firm and heavy than any home-grown cabbage, although the native product is said to be sweeter. Beautiful new potatoes have been coming from Havana for a week and bring six dollars a barrel; old potatoes from Bermuda bring the same price. Scotch magnums still sell at higher prices than our native potatoes, being of larger size, more regular in form and more evenly selected. They are considered better than the potatoes from either England or Ireland, but not so good as those from Germany. At present prices, which are one-third less than they were last year, after the cost of sacking, transportation and duty is deducted, the returns to the Scotch dealer can be hardly more than fifty cents a barrel. Last month 40,000 sacks of these potatoes arrived, but the market is so dull that many of them are still kept in storage. From France we are receiving Brussels sprouts at twenty-five cents a pound, and cauliflower at forty to fifty cents a head. Corn salad, chives and escarole from the south, make the markets green. Florida is sending peppers, egg-plants, okra, beans and peas, the last of which command as much as eight to nine dollars a bushel crate when of the first quality. A few bunches of Charleston asparagus, the first to arrive here this season, sold last week at a dollar and a half a bunch, but the quality scarcely warranted this extreme price. Apples still remain scarce, although they are held in considerable quantity in the interior of the state. Northern Spies, Baldwin and Greenings bring six dollars a barrel, while it is hard to get Kings even at eight dollars a barrel.

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Horticultural Novelties.

EVERY year, as the seed and plant catalogues come with their glowing descriptions of new garden-plants, the buyer is confronted with the problem whether he shall test some of the more promising ones or wait until the experience of others has demonstrated their actual value. New flowers, new ornamental plants, new fruits and new vegetables in great numbers are sent out every year, and the man who has them for sale rarely troubles himself to explain their faults or weaknesses, even if he knows them, but he naturally takes good care to paint their real or fancied merits in the brightest colors at his command. Of course, those who put utter confidence in these one-sided descriptions are often disappointed, until at last they distrust every statement and assume a hostile attitude toward every new introduction. It is plain, however, that if we reject everything because it is novel, we set ourselves against all improvement, and, in fact, we deny the possibility of any improvements. This is clearly unsound, for, in the first place, there is always the possibility that new species may be discovered or that plants hitherto unknown to cultivation may be introduced, and when such introductions have the endorsement of some well-known collector, it is not difficult for those who are familiar with plants which are closely related to the new ones, to decide whether it is worth while to give hospitable welcome to the new-comers. Again, plants always have a tendency to vary, and, by sporting or intercrossing, new varieties of old plants are constantly appearing. It by no means follows that a new variety is superior to the old in any respect, and it is highly improbable that it surpasses known forms in every respect, and yet, so long as we believe that the limit of improvement in the evolution of any plant has not yet been reached, we cannot afford to neglect all new forms. *Cosmos hybridus* has not been planted to any considerable extent until within a few years, and yet we see in several seed-lists the advertisement of new strains which are to give more and larger flowers, and flowers of purer color than the ordinary type. Last autumn we inspected some of these flowers,

which showed a manifest advance over any we had before seen, though whether these improved characters will persist and be reproduced from seed, we have no means yet of knowing. In such cases as this we have no guide but the trustworthiness of the dealer, and yet there is little doubt that the man who tests many novelties, and finds himself often deceived, will have more pleasure out of his horticultural experiments than he who assumes the attitude of repugnance against everything that is new.

It would be of considerable advantage if we could formulate out of the teachings of reason and experience some definite code of rules to guide us in determining what novelties we should consider the most hopeful, and which ones we should distrust; but this seems impracticable with our present knowledge. We know something of a plant when we know its pedigree; we know something of a hybrid or cross-bred plant when we have some knowledge of its parents, and the time may come when we may know a good deal more with such data at command. Still there are some general principles which it is worth while to consider, and this is especially true in the case of new fruits. Certain phases of this question were discussed at the recent meeting at Rochester, and Professor Bailey laid down some propositions which it is worth while to consider. We may premise that short-lived plants change most rapidly—that is, in a given number of years a plant with the greatest number of generations shows the greatest variation. For example, there is as great a difference between the Strawberries of to-day and the Strawberries of ten years ago as there is between our present varieties of Apples and those of a hundred years ago. Again, plants which are propagated by seed constantly tend to differ from their parents, and finally diverge so widely as to need new names. Plants which are propagated from abnormally developed parts, like the Potato, constantly tend to deteriorate unless they are selected and grown under the very best conditions. Plants propagated from normal or invariable parts by cuttings or grafts remain substantially the same for long periods of time. It should also be remembered that an improvement in the type must come from the origination of new forms, and a new form may have merit, even if it does not surpass old ones in most qualities, for it may have some attribute which fits it for a new use, for supplying an unfilled gap, for new regions or soils or tastes.

If, then, we assume that the evolution of cultivated plants follows to some extent the laws of evolution of new types in nature, we may constantly hope for improvement so long as there is change in the physical features of the globe brought about by human habitation, for new plants are always found to adapt themselves to these new conditions. These changes of environment have been very rapid in our own country and they are still going on, and until these physical conditions are more firmly established we may hope for new fruits to meet our new wants. As our vast territory has been brought under cultivation, all plants, and especially those grown for fruit, have responded with wonderful facility to the demands which new climates and new human wants have placed upon them. It is worth noting, that this adaptability has been most marked in fruits which were near to the wild type, and which find themselves, therefore, under quite new conditions in cultivation. Our native Plums have given us, within forty years, two hundred varieties, adapted to a remarkable range of habit and use, while our Blackberries and Raspberries, within a generation, have almost equaled the advance which our native Grapes have made in a century. We cannot hope for such rapid improvement in the future, because the more good varieties of any plant which are produced, the more strenuous will be the rivalry between them. But because new varieties will be more rare among the old and standard fruits, it does not follow that they will not be produced at all. On the contrary, we may expect that desirable novelties will be developed as long as horticulture needs them.

The sum of the matter, to paraphrase Professor Bailey's conclusion, is (1) that the older and more improved the type

the more slender are the chances of securing worthy novelties; (2) that there is the most use for novelties among plants which are propagated by seeds, or by normally developed parts, because these plants quickly run out by variation; (3) that valuable novelties appear less frequently in old regions than in new, because of the greater competition of established varieties there; and (4) that the merit of a novelty lies in its adaptability to some particular use or demand. A good novelty need not surpass all old varieties in any particular, or any old variety in all particulars. What it does need is to be fit for some entirely new condition or use, as, for example, a currant or gooseberry, which would be sweet and tender enough for dessert fruit, might be a useful novelty even if, in other respects, it were inferior to all existing varieties. It is prudent, therefore, to be cautious about adopting novelties among the old standard fruits in old horticultural regions, and to be suspicious of all those which are recommended indiscriminately as having every good quality, or for all regions.

Where the Work of the Landscape-gardener should begin.

THE great majority of cases in which the invention of the landscape-architect is called upon are those where the land about a dwelling-house is to be adorned with regard to convenience and economy of space. The scheme must not only be a thing of beauty in itself, but must be devised to set off the appearance of the building from without and to display its own best effects from within the walls. The character of the arrangement changes with its distance from the house, the central object on whose position depend all lines of road and walk, all forms of plantation and lines of vista, both in length and direction. Yet there are few instances where the idea is broached of consulting the artist, who is responsible for the regulation of all this, as to the position of the central object, which must of necessity control the whole design. Both owner and architect are usually ignorant of, or indifferent to, its importance, and consult convenience or prospect (sometimes), or often, probably in the absence of definite reasons, are guided by caprice merely. To the architect especially this question of location is of extreme importance, as his work requires the accessories of site and surroundings for its perfect expression. It is no discredit to him that he is usually unable to decide this important matter, depending as it does on many considerations entirely apart from his ordinary lines of study. But it seems unaccountable, that being able to point to many buildings whose impressiveness is vastly enhanced by their situation, he should so seldom think of calling on the help of his fellow-artist of the landscape to show him where his work may receive its due advantage from its surroundings.

Still more rarely is the foresight of the landscape-artist allowed to have any influence on the placing of the rooms, that part of their attractiveness which depends on pictures seen from the windows, when not left to chance, being provided for by those who, whatever may be their appreciation of existing beauties, are quite unable to foresee possible ones. Yet every dwelling owes much of its charm to what is seen from within.

A primary factor in the placing of a country house is prospect, or the scenes within and without the grounds that are visible from the windows. A building set with due attention hereto will almost inevitably stand high, thus ensuring good drainage and fresh air. Aspect, though very important, depends in great measure on arrangement of the rooms. Points of vantage for the house are few on most grounds, while facility of access to it can generally be contrived in many ways; drives can have their length concealed, or even made a source of interest, by their courses and their relation to the planting.

Where the surface is not very uneven, the combined inexperience of owner and architect commonly results in setting the house in the middle of the grounds. This position is,

as a rule, the most disadvantageous that could be selected for extent and variety of lawn-surface and propriety of lines of approach; all vistas of importance within the boundary are obstructed, and the building itself becomes always too obtrusive an object, out of whose presence it is difficult to get. All these causes unite to detract from the apparent extent of the place. Such impediments to unity of design decrease inversely with the size of the place, but, though most apparent on a small one, are never inconsiderable, as the character of the work and the effects produced will vary with the number of acres. But considerations like these seldom affect the decision of the architect or his employer. The former ignores his best ally, who, when choice of a suitable spot is difficult, can supply definite reasons for his conclusions. If his advice were sought in time, his task would often be easier and the satisfaction of the owner greater; but it generally happens that when the structure is built and immovable, the architect of the landscape is called in to adjust his ideas to the mistakes of his predecessors, and to stake his own reputation and that of his art on a composition whose salient features have been already ordered by people indifferent to or unconscious of their significance.

Pittsburgh, Pa.

H. A. Caparn.

Exotic Trees and Shrubs for Florida Gardens.—II.

CLETHRA ARBOREA, an exquisite Ericaceous plant, grows well on high Pine-land, but, unfortunately, it is frequently cut back by severe frosts. In a half-shady, sheltered spot, however, it is perfectly hardy. The leaves are shining green, and the fragrant white flowers appear in racemes at the top of the branches. It attains a height of ten to fifteen feet, is of straggling growth, and has the appearance of a small tree. *C. quadrangulata*, raised from seed, grows also well in the sandy soil, but is still more tender than the preceding.

Daphne Indica, a native of China, is one of the most beautiful of shrubs, highly prized as a greenhouse-plant in northern countries. In Florida it is easily grown if planted in a shady spot. In the autumn of 1889 I sent down a small plant, which was planted out under the shelter of a shed which is open on all sides, and over which dense masses of *Passiflora cœrulea* clamber. The soil is the common white sand and a little muck. Although the plant was rarely fertilized and watered, it is now about four feet high and blooms profusely in winter. Sessile clusters of white or rosy white and fragrant flowers appear on the ends of the branches and last for a considerable time. *D. Cneorum*, which was planted out in a like position, was an entire failure.

Duranta Plumieri, a native of the West Indies and South America, grows vigorously in almost all parts of Florida, being generally known by the name of Golden Dewdrop. The pretty blue flowers, which appear in great abundance in slender racemes toward the end of the branches, are followed by clusters of golden berries, hanging in graceful profusion six months of the year. The evergreen leaves are oblong-lanceolate, and the branches are spinose. The compact growth, evergreen foliage, pretty blue flowers and golden berries combine to make this *Duranta* a very fine ornamental shrub. It grows in the poorest soil; and, having escaped from the gardens, is now found wild in some parts of Florida.

Escallonia rubra and *E. floribunda* made a feeble growth in the first year, and died in the second, while *E. macrantha* grows well under a shed. I feel quite certain that most *Escallonias* will grow well in Florida if planted in rich soil and in a half-shady position. Most species are growing wild in Chili in rather dry situations.

Euphorbia pulcherrima, generally known as the Poinsettia, is a notable feature in all the gardens of the Gulf region. My plants grow to a height of eight to ten feet, but are cut down by several degrees of frost almost every year, and sprout from the roots in spring. In November they begin to bloom. The bright vermilion bracts of the

Poinsettia are well known as holiday ornaments of northern greenhouses, and here in the open air their blazing color can be seen from a great distance. In spring the plants must be cut back severely in order to induce them to branch out more freely. A plant eight or ten feet high, with twelve to fifteen or more flower-heads, is a magnificent sight. The Fire-bush, as it is called in Florida, is perfectly at home in the sandy soil.

Franciscea (*Brunfelsia*) *calycina*, a native of Brazil, is an exquisite shrub with large lanceolate light green leaves and large trusses of purple flowers, which appear in succession throughout the spring, summer and fall months. *F. eximia*, *F. Lindeniana*, *F. confertiflora*, *F. hydrangeæformis*, *F. latifolia* and *F. uniflora* are all broad-leaved evergreen shrubs with blue flowers. A number of these were sent to Florida in the fall of 1885 and planted out in a small clearing near Lake Audubon, but they did not get the necessary care, and all were lost. *F. uniflora* has been grown with great success in Mr. E. H. Hart's garden. It was planted in a half-shady position, where it is perfectly at home. Mr. Reasoner grows another species from the West Indies, *F. Americana*, whose fragrant flowers are yellow when opening, but finally become white.

Gardenia florida and its varieties, natives of China, but known under the rather inappropriate name of Cape Jasmynes all over the south, thrive admirably in Florida, and make a beautiful display, especially when in full flower. Specimens ten to twelve feet high, and as much in diameter, are often seen on old places. The evergreen, shining leaves, the pure white double flowers exhaling a delicious fragrance, the dense growth and the ease with which the plants are grown into fine specimens, place them in the front rank of ornamental shrubs. The stunted yellow-leaved specimens which we sometimes see in south Florida only prove the carelessness of their owners. A little fertilizer and a heavy mulching will make fine specimens.

Grevillea robusta, Silk-tree, or Silk Oak, an Australian tree of great beauty, grows as well as Magnolias on the dry sandy soil. The large fern-like leaves are covered with a silky down. Trees in Orlando, planted six years ago, are now twenty to twenty-five feet high and show a dense crown of branches and leaves. The flowers appear in paniced racemes and are of a beautiful orange color. The variety *Pyramidalis* has a broad dense spreading crown and is far superior to the type as a shade-tree. *Grevillea Hilli*, of which I have a number of young plants, is said to be very beautiful.

Embothrium coccineum, of Chili, also a member of the order Proteaceæ, is an exceedingly beautiful broad-leaved evergreen tree, bearing exquisite red flowers in great abundance. It grows well in the gardens of the Riviera, and even in Ireland, and ought to be tried extensively in Florida.

Hibiscus rosa-sinensis, Chinese Hibiscus, is one of the best of flowering shrubs, being equally effective as a single specimen and in groups. Its habit is always good, its branches being dense and its leaves of a rich glossy green. The many garden-varieties are all desirable. All are easily grown on high poor Pine-land, and with a little care and fertilizer three-year-old plants attain a height of ten to twelve feet. The single-flowering varieties are stronger growers than the double ones, but the latter are more profuse bloomers. Being tropical plants they luxuriate in the full rays of the sun. A group, consisting of about a dozen forms, is a picture which makes a lasting impression. If massed together, so that the ground is shaded, they do not need so much water as single specimens. The ground around them should always be heavily mulched. In groups the single varieties must find a place in the centre or in the background, as they are of the most vigorous habit and are certain to overtower the double kinds. The garden varieties are too numerous to name, but they range through many colors, and it is not difficult to make a good selection.

Hibiscus mutabilis, Cotton Rose, or Confederate Rose, is a small tree of rather open habit. I first noticed it in the

gardens of New Orleans, and later at Mobile, Pensacola and Jacksonville. It is a fine plant when in bloom, bearing at the same time white and red flowers, and thus presenting a very striking appearance. The showy double flowers are white in the morning, changing to pink at noon, and to deep red at night. As the flowers last almost to the middle of the next day, the contrast of the white and red blossoms is very impressive. This plant is also known as the Mexican Rose; it is, however, a native of China and India, and thrives well on high Pine-land, but grows to perfection in rich hummock soil.

Hibiscus Syriacus, Althea, Rose of Sharon, in many varieties, grows well in Florida. Though I do not grow this shrub myself, I have seen several fine specimens near Gotha.

Hydrangea hortensis, the Hortensia of China, is growing luxuriantly under the protection of a shed, near Viburnum-tinus, *Daphne Indica* and *Myrtus communis*. It flowers profusely in winter, commencing late in October or early in November. I planted out the common rose-colored variety, but in Florida the flowers have assumed a deep indigo-blue. If well fertilized, mulched and shaded, this fine old plant thrives in all parts of Florida. *H. Otaksa*, *H. Thomas Hogg* and *H. stellata* grow equally well under the same treatment.

Milwaukee, Wis.

H. Nehrling.

Notes for Mushroom-eaters.—IV.

GILL-BEARING FUNGI—CONTINUED.

AMONG our most easily recognized forms is the Parasol-fungus (Fig. 5, p. 44), *Agaricus procerus*, which is edible, and not easily mistaken for poisonous forms. It has white gills and spores, but no volva, and the ring is not fixed, but may be moved up and down. The stipe is very long, hollow and rather slender, and the pileus is closely covered with scales free at the outer edge, and when expanded is not flat at the centre, but raised in a blunt projection. The color varies from nearly pure white to more frequently a pale brown, and the fungus often attains a considerable size, so that it can be seen from a distance as it stands up in the grass. The substance is tougher than that of the species previously mentioned, and it remains for some time without decaying. The only species closely related botanically to the Parasol-fungus which we can stop to consider is *Ag. naucinus*, which is found only in the autumn, when it is not uncommon on lawns. The fungus-gatherer is often puzzled by this species, which, on the one hand, resembles the true mushroom, and, on the other, resembles some of the poisonous white-spored species. From the latter it can at once be distinguished by the absence of all trace of a volva. From the former it is distinguished by its white, not purple, spores, and by its gills, which remain white until quite old, when they turn very slightly pink.

After the true Mushroom, our commonest and best species, considered by some even better than the mushroom, is the Horsetail mushroom (Fig. 10), which abounds in fields and by road-sides in the autumn, and is sold to some extent in the Boston market, but, as far as we know, not elsewhere in this country, under the name of English mushroom. The Horsetail mushroom springs up in groups, often of considerable numbers, and the pileus, instead of opening, remains like a closed umbrella until it begins to decay. The pileus is oval in shape and densely covered with shaggy scales of a white color. The stipe is hollow and the small ring is quite loose. The gills are at first white, and then pinkish until decay begins, when the whole fungus quickly changes to a black fluid mass. The spores are black. We have two very common forms closely related to the Horsetail, which grow in dense clusters near the base of stumps and trees, but in neither form are there the shaggy scales or the ring. Furthermore, mistakes here are not dangerous, for the two species are not poisonous, and one is certainly edible, but not very agreeable, at least to the writer.

Every one has noticed the very pretty fungi with smooth bright red pilei which spring up in large quantities in and near woods and groves during the summer. They belong to the genus *Russula*, which has white spores, and is dis-



Fig. 10.—*Coprinus comatus* (Horseshell Mushroom). Small specimen—edible.

tinguished from the species of the genus *Agaricus*, described above, by the fact that the pileus is quite thin and the gills are arranged very regularly like the spokes of a wheel—that is, there are few or no short gills inserted between the long gills. The gills are usually pure white, but may be cream or buff color. Several of our common species of *Russula* have a very acrid, peppery taste, and are poisonous, although it is claimed that the acidity and poisonous property may be removed by cooking. However that may be, the good and bad species of *Russula* are distinguished from one another with great difficulty, and unless one is an expert he had better abstain from using any of the *Russula* species. As they are mostly small and have but little substance, they are, on this account, of comparatively little value at best.

In none of the species we have as yet mentioned is there to be seen any milk-like fluid which oozes out in drops when the fungus is broken or wounded. The genus *Lactarius*, however, contains a good many striking species which are characterized by an exudation of a more or less milky fluid, which is usually white or yellowish, and to the taste may be very peppery, like that of the *Russula*, or mild and pleasant. Fortunately, the best of our *Lactarii*, *L. deliciosus*, is easily recognized by the fact that it is practically the only one of our fungi which when broken or cut gives out a copious deep yellow-red milk, which slowly becomes greenish in drying. It is often very common in evergreen woods near our mountainous regions, but is hardly found in lower districts. It is of a clear yellow-red color throughout, with a concave, somewhat mucilaginous, pileus and hollow stipe. It can hardly be mistaken for any other species when in good condition, although, as it becomes old and dry, when it is not very good eating, it resembles another species which is, however, not poisonous. In this connection we should mention another species, *Lactarius Indigo*, one of the wonders of our fungus flora, which is of a beautiful blue color and gives out an abundant indigo-blue juice. We do not know whether this species is edible or not, but its repulsive taste does not tempt one to experiment with it. To sum up, the beginner

should avoid all fungi which give out a milky juice unless the juice is red. The acrid species should not be used at all, and, even when the milk is not acrid, experiments should not be made without caution.

We can only briefly refer to other gill-bearing fungi. In all the species hitherto mentioned the stipe is attached at the centre of the pileus, and the rather sharp knife-blade gills radiate from its apex, or very nearly so. In the *Chanterelle* (Fig. 11), however, the gills are not sharp and straight, but blunt and more or less wavy, and extend for some distance down the stipe, so that they appear more like ridges or folds than knife-blades. The *Chanterelle* is often very abundant in midsummer in woody places, and is easily recognized by its peculiar gills and color, which is egg-yellow. We have other species of *Chanterelle*, but, with one exception, they are not dangerous, and the common edible *Chanterelle* is not likely to be confounded with the dangerous form if one recollects that the under surface, as well as the upper surface, is of an egg-yellow, and that the upper surface of the pileus is flat, or a little concave, but is not hollowed out in the form of a funnel.

The oyster fungus, *Agaricus ostreatus*, grows in large masses on the base of old trunks, often as late as November. In this species and its allies the stipe is not attached at the centre of the pileus, but at one side or on the margin, and the long gills are prolonged down over the stipe. The different pilei overlap one another, and the shape of each pileus in *Ag. ostreatus* is a little like that of an oyster-shell. We mention this fungus because it is edible; not very good, however, to our taste. Lastly, we may mention the so-called Fairy-ring fungus, common in door-yards and grass-plots. It is of a dull yellowish white color throughout, of small size, seldom more than two inches across, with a slender hollow stipe and comparatively few coarse gills. The substance is rather tough, and the fungus does not easily decay, but after drying, revives when the weather becomes moist again. It gets its name from its habit of growth. The fungus appears in tufts in the grass, the tufts being arranged in the circumference of a circle, and the circles may be recognized at a distance, from the fact that just within the circle formed by the fungus is a circle of grass more luxuriant than elsewhere. We cannot stop



Fig. 11.—*Cantharellus cibarius*, Chanterelle (two-thirds natural size)—edible.

to explain the origin of the grass rings, the so-called fairy-rings, but it should be said that this is not the only species which causes fairy-rings, although they are unusually well marked in this case.

Harvard College.

W. G. Farlow.

New or Little-known Plants.

A Fastigate Sugar-maple.

THE branches of the Sugar-maple in its juvenile state often assume an upright habit of growth, and during the first twenty or thirty years of its life this tree is more apt to produce a narrow oblong head than one of any other shape. Later the branches become horizontal when they find sufficient room in which to spread, and the head of a well-grown Sugar-maple in the prime of life is broad and round-topped. That this is not the universal habit of this tree, however, is shown in the illustration on this

fastigate habit which are available for our planters are varieties of European species, and as these are less successful, as a rule, in this country than our native trees, planters who may require a fastigate tree to produce a particular effect will be glad to replace European by American species where it is possible to do so.

The tree, whose portrait we publish, is growing in the grounds of Mrs. Leavitt, in Flushing, in this state; it is now some eighty feet tall, with a trunk diameter of two feet at three feet above the surface of the ground, and is supposed to have been planted in its present position more than fifty years ago, and to have been taken originally from the seed-rows in the old Parsons' nurseries.



Fig. 12.—A Fastigate Sugar-maple, at Flushing, New York.

page, which represents an individual on which all the branches are regularly and constantly fastigate. It is the only large Sugar-maple with this habit that we have seen, and as fastigate trees are curious, interesting and often beautiful objects which permit the landscape-gardener to produce effects which cannot be made without them, it is desirable that this individual should be propagated by grafting. This is specially important, because up to the present time only two other American trees have produced forms with fastigate branches; these are the fastigate *Robinia*, or Locust, which appeared in 1839 in Leroy's nursery in Angers, and the fastigate Tulip-tree, which originated much later in Alsacé. The other trees of

New Orchids.

MASDEVALLIA REBECCA.—This is a hybrid between *Masdevallia ignea erubescens* × *M. amabilis*. The flowers are as large as those of the seed-parent; the perianth tube is cinnabar red; the veins crimson; the free portion of the upper sepal triangular, contracted into a slender tail one and a half inches long, nearly upright, and deep orange-red. The lateral sepals are connate to the middle, terminating in short tails, of deep red color, studded over with rich crimson-purple papillæ. This hybrid flowered for the first time in January, 1893, in the collection of Mr. Ames, Langwater, where it was raised, and so highly did Mr. Ames

think of it that he named it in honor of Mrs. Ames. It has again flowered, and the flower is even more brilliant in color than it was last year, and is, indeed, the richest in color of any *Masdevallia* I have yet seen. The plant was described last year by Dr. Kranzlin (*Gardeners' Chronicle*, ser. 3, xiii, 740).

MASDEVALLIA HENRIETTA.—This is a hybrid between *M. ignea* and *M. caudata*, var. *Shuttleworthii*. The flowers are intermediate in form between the parents, although much larger than either. It flowered for the first time in January, 1893, and ten plants of the same cross have already flowered, no two of which are exactly alike. Some flowers are striped, more are beautifully spotted, some on a light yellow, and some on orange and some on rose-colored ground. It is of easy culture and flowers freely. One plant is carrying fourteen flowers, and it is not yet five years old. Dr. Kranzlin described this plant last year in the *Gardeners' Chronicle*, l. c.

MASDEVALLIA, MARY AMES.—This is a hybrid between *M. ignea* × *M. Gairiana*. The perianth tube is orange-red; upper sepal triangular, contracted into a slender tail, one inch long; orange, with reddish tips; lateral sepals connate to the middle, gradually terminating with a short tail. The color is orange, margined with deep red. The dorsal-sepal is almost upright. This hybrid flowered first in December of last year. It is of compact habit, the flowers rising just above the foliage.

SELENIPEDIUM HELENÆ.—This new hybrid, between *Selenipedium Wallisi* × *S. leucorrhodum*, bears a flower which shows the influence of both parents. The upper sepal is yellow, tinted rose; lower sepal yellow; petals drooping, yellow, tinted rose; lip yellow, slightly suffused with rose; infolded lobes creamy white; staminode creamy white, fringed with blackish purple hairs. The influence of *S. leucorrhodum* preponderates in the shape of flower and foliage. This hybrid flowered in twenty-five months from the seed.

North Easton, Mass.

William Robinson.

Cultural Department.

The Conservation of Water for Orchards.

THE following paper, by Professor I. P. Roberts, was prepared for the fruit-growers of western New York, but the doctrine it contains will be found of general application:

Water carries all of the food of plants and animals into circulation and all excreted material out of circulation, so there cannot be abundant growth and vigorous healthy life without there is an abundance of water always present in the tissues of growing organisms. Most living plants contain from seventy-five to ninety-five per cent. of water, but, notwithstanding the great need of plants for a liberal supply of water, the soil may easily contain so much as to injure or even destroy them. Superfluous water in ordinary cases may be carried off by surface and underground drains, but the problem of supplying water cheaply to plants when there is a lack, is a difficult one.

In most localities in the eastern and middle states, surface irrigation is found to be impracticable (1) on account of lack of water, and (2) because on many soils surface irrigation injures the land. Clay lands, unless most thoroughly underdrained, become puddled, sour and reduced in productive power when thus irrigated. Only on certain classes of soils, usually found in arid countries, does surface irrigation become fully successful. Sub-irrigation is the ideal method, but it is so expensive that it can only come into use where large amounts of very valuable products can be secured on small areas.

With few exceptions, all cultivated plants have to depend on the water stored in the soil. How to make a great store-house for water in the soil without saturating it, and how to get the water near the surface for the use of the plant without letting it escape during dry weather, are, therefore, subjects of prime importance to every plant-grower.

An acre of soil one foot deep will weigh about 1,600 tons, and may contain, when in good condition for growing crops, thirty-two per cent. of water, say, 500 tons or 4,000 barrels per acre. If the soil is too compact or too loose, not more than half this amount, sometimes not more than one-quarter, will be contained in the interstices of the land. Soils vary greatly

in their power of holding water without being saturated. A friable clay loam has the power of storing water to a much larger degree than heavy clay or loose sandy soils. Heavy rains in the fall and spring tend to puddle the land—that is, fill the interstices which are between the particles or molecules of earth, thereby diminishing to a great extent the storage capacity of the land. Often about the only object of deep culture is to overcome the effect produced by heavy beating rains and to enlarge the capacity of the soil for holding on to moisture. There is a large amount of water stored in the first twelve inches of the surface soil, and we know that a large additional amount is found in the subsoil. In some cases it is far more than is found in the surface soil, although usually that is not the case.

The question arises, how to make the best use of and how to conserve this stored-up water, which finally contains all the nutritious material which enters into the circulation of the plant. Thin seeding assists materially in the conservation of moisture. Plants usually suffer in the middle and latter part of the summer when they are trying to produce fruit. If too many plants are growing upon the surface the land will already have been robbed of its moisture before the fruiting season, and a failure to produce satisfactory seeds and fruits is inevitable.

Another method of conserving moisture is to shade the land, but if this is done with growing crops, as clover and the like, the amount of water which is evaporated from the leaves is greater than that which is conserved by the shading. So, where the object is to conserve the moisture for the use of the tree when it is fruiting, it is not wise to have growing crops in the orchard.

Mulching of the soil with straw or other coarse material cannot be practiced in any large way, and, therefore, little dependence can be placed on this method. In bearing orchards this should be done, if at all, about the last of June. The conservation of moisture by surface cultivation has been found eminently successful. The enlarging of the capillary tubes at the surface prevents the water from rising; the loose upper layer shades the land and keeps it cool, thereby preventing to a large extent surface evaporation.

Some experiments conducted during the winter in a warm room out of the direct rays of the sun, gave the following results:

(1) On plots cultivated about one and a half inches deep, less water by 2,000 pounds evaporated daily from an acre of soil than from plots of a similar character and under identical conditions, which had not surface culture. (2) On a heavy clay soil the evaporation from the cultivated plot in a day was 4,000 pounds less per acre than from the uncultivated plot. (3) On a clay loam evaporation was 4,400 pounds less in a day. (4) On a light garden-soil it was 2,500 less than on the cultivated plot per acre than on that which was not cultivated.

It will readily be seen what a vast influence the daily cultivation had on the moisture of the soil. Some experiments conducted several years ago with a mixture of equal parts by weight of salt and plaster applied to the land at the rate of 4,000 pounds to the acre conserved the moisture of the first four inches to the amount of fifteen tons of water per acre—that is to say, the soil which had been treated with this mixture contained, about two weeks after the mixture had been sown, fifteen tons of water per acre in the first four inches more than the adjoining plots which were not treated. This amount of water, it is true, is not large, but it was large enough during a drought, when the experiments were conducted, to furnish enough extra moisture to the growing Oats to be easily discernible by the growth of the plant. There is not the slightest doubt that a weekly surface cultivation of orchards, from June until the last of August, helps materially to save the water in the soil, while at the same time culture sets free plant-food and keeps the lower strata of the soil cool and moist. Wherever the conditions do not forbid surface cultivation it should be practiced extensively in orchards for the threefold purpose of conserving moisture, preparing plant-food and shading that portion of the soil which is occupied by the roots of the growing plants.

Grapes in January.

WITHOUT special precautions beyond storage in a cool cellar, I find that I can have the following grapes for eating in midwinter: Pocklington, Diana, Herbert, Duchess, Amber, Iowa, Jefferson, Lady Washington, Vergennes, Goethe, Isabella, Catawba, Niagara, Hayes, Diamond, Gärtner and Worden. Concord has kept well with me as late as the end of December. The grapes were carefully handled in picking,

placed in new sweet baskets, about half-filled, and set at once in bins in a cool, dry cellar. At the approach of cold weather I aim not so much to have the room cold as to have an unvarying temperature for the grapes, and a piece of thick brown paper is tied close over each basket. The quality of the Worden is unsurpassed, and this variety supplies a delicious winter grape up to mid-December. Duchess, if picked before cracking, keeps well, and I had Brighton in good condition in December, when it dries into a very good raisin.

There are enough good grapes which ripen in August, September and October. The need is for long-keepers. Of those we now have, Amber and Diana are excellent; but Amber is one of the class of very tart grapes, like Greins' Golden, and is relished by few. Goethe and Iowa should be ranked as November and December grapes, and there is nothing to excel them. Herbert is another satisfactory grape, of excellent quality and a fine keeper. Vergennes, although keeping well, lacks in quality, and is at no season a grape of much value. It is a curious fact that some of the thin-skinned grapes are among the best keepers. Goethe, Iowa and Worden are thin-skinned, while Diana, Herbert and Vergennes are much thicker.

Clinton, N. Y.

E. P. Powell.

Annual Flowers from Seed.—I.

NOW that the days begin to lengthen and the seed-catalogues, in their lurid magnificence, present their annual temptations, every one who has an available strip of earth and good, healthy, natural instincts, with a little leisure, will feel a yearning for the vernal weather, which is the seed-time. This yearning, unfortunately, often does not materialize into action, for we are a busy people, and our attention is apt to be diverted from things which require study, thought and some care, by the things crowded on our attention in all directions. Among the people who seriously wish to have a garden, which they are possibly undertaking for the first time, there are many, of course, with an almost entire lack of knowledge of plants, and especially of their culture from seed. No questions are so often asked of the gardener as "what shall I plant," and "when" and "how," and "which are really the best things to grow?"

Seed-catalogues do not answer these questions exactly, or, rather, they give too many answers, from the very extent of their lists of seeds, all of which are required, more or less, by different patrons. A seed-catalogue, at the best, is lacking in perspective, and it may be well at this time to review the subject of the sowing of seeds of annual plants, or those which flower the first season from seed, in order to anticipate the annual inquiries for the most useful and satisfactory plants, not only for the borders, but also for cutting and house decoration. Good plants of this character are so much valued that florists and cultivators are constantly selecting and hybridizing the most approved strains in the endeavor to effect improvements, and these, or the novelties as they are called, appear with unfailling regularity. A surprising number of these are remarkably good, and there is from year to year a constant gain, but these gains are most appreciated by those of experience, who, if thorough-going gardeners, usually feel repaid for an outlay by the pleasure of trying for a prize. A beginner should rather confine his attention to the old approved forms until his taste develops in some definite direction. For instance, if one is fond of China Asters, almost anything new will prove satisfactory, but if he does not care for the family, nothing, even of the rarest, will please. People persist in buying new Godetias or some other flower the type of which they do not care for, and grumble at the seedsman for selling them what may be a very meritorious thing from some other person's point of view.

When to sow seed is a question which admits of no general answer, but as the beginner usually buys his entire stock in lump as the first genial day warms his garden-fever, it may be said that most annuals will flower satisfactorily if planted in this latitude in late April or early May in proper locations. Most of them are better for not being hurried forward, and they are always stronger when they can be germinated under moderate warmth, and with a plentiful supply of fresh air in all stages. Unless otherwise stated, the seeds of plants to which attention will be called are best sown out-of-doors in a temporary frame, which should be located in a warm place, or in one sheltered from cold winds. A temporary frame made by nailing four boards to enclose a square or rectangular space is as satisfactory as a more elaborate construction. For the top, provide a covering of thin stuff like cheese-cloth or waterproof fabric. A raised bed should be made inside this frame of good sweet, loose loam, free from clay or packing qualities. The lower layer should be passed through a medium meshed

sieve and be well firmed. The seed-plots should be marked out with a flat stick and the earth well moistened and allowed to drain. A bed prepared in this way, with the cover stretched over it, will be ready in this latitude for its contents the last week in April, usually, and tender as well as hardy annuals may be planted with safety. As a matter of convenience, it is well to separate the fine-seeded kinds from the coarser ones, so that when sifting earth over them for a final covering, the fine ones may not receive an undue proportion. As a rule, seeds should be covered with a layer of soil about equal to their diameter in thickness, though it does not injure the coarser ones to bury them deeper. The earth should be firmed over the seeds so as to envelop them in a moist compact covering, and if the seed-bed has been judiciously watered most of the seeds should germinate without further moisture. As seeds do not require light for actual germination, moisture may be preserved by covering the seed-bed with paper for the first few days. As soon as the seeds are fairly well germinated, as they will mostly be in a week or ten days, air must be given as freely as possible, though the plants should at first be shaded from sunlight.

In the earlier stages of the plants care should be taken not to keep them close at any time or to overwater, which will cause them to damp off and to rot at the surface of the ground. In a cold, wet season slugs may appear, and these are very fond of young growths. If missing or eaten leaves show their presence, vegetable traps, like sliced potatoes, should be set for them, and the slugs destroyed in the early morning. Aside from these possible visitations, the seedlings, with ordinary and slight attention, will soon make their first true leaves, after which they are ready for transplanting. While they are making their growth in the open it is always prudent to cover the beds with a light covering of thin brush to discourage cats, hens and other marauders. A frame of this kind is a labor-saver, as the work is concentrated in one spot and the various sowings can be rapidly inspected and the necessary attention given. When seeds are sown in various plots in the garden the work is so many times magnified, and various disasters are sure to befall some of the plantings. Most plants can be readily transplanted in a young stage, Poppies and Mignonette being about the only ones which offer any difficulties. The former are always better for being sown in the fall, but are not difficult to transplant when young if the seed-bed is allowed to become quite dry and the long tap-roots are not injured in lifting. Mignonette resents root-disturbance, and should be lifted when the ground is moist, with a good ball of earth.

The transplanting of other annuals is a simple operation. Having thoroughly prepared the beds into which they are to be transferred by deep digging and fining the soil, it is well, if possible, to await a favorable time, such as the approach of cloudy weather, avoiding a period when the ground is wet and in a condition to pack as one presses it. Providing the ground is in fit condition, transplanting may be safely done in the brightest weather if temporary shading is supplied. It is well to have a few two-by-two or three-by-three frames made of laths, with cheese-cloth stretched over them. These are useful at all seasons in the garden for temporary shelter in transplanting operations. Furnished with a flat pan and a three-tined kitchen fork as a digger and dibber, one can rapidly raise the young plants from the seed-bed and transplant them. If the seed-bed has been made properly of loose earth the seedlings can be separated easily and without breaking the young roots. A hole is dug, the plant is given a gentle twirl to spread the roots as far as possible, and the dibber, inserted a short distance away, is used to bring the earth up solidly, so as to leave no hole or vacancy around the roots. The plant being planted, each plant should be settled by careful and not overmuch watering, and loose dry earth drawn toward the plant as a mulch. If some well-rotted manure is available, a covering of this over the bed is a desirable finish, and supplies the plants with a mulch, and later with food. The beds must be shaded until the plants show signs of moving or cloudy weather allows them to be fully exposed.

As to what to grow, the element of taste enters so largely in the selection that we must advise those species which, by general consent, are considered the leading and most satisfactory ones. Considering these in catalogue order, the China Asters occupy certainly, in every way, a leading place and are indispensable. Naturally flowering in August and September, not much is gained by hurrying them into bloom until the cool nights of late summer. The seeds are of fair size, easily handled, and germinate at sixty to seventy degrees rapidly and strongly. They must not be overheated in any stage, and must have air and light to keep them stocky. They should be planted in rich, well-drained soil, and, in order

to be well cultivated, in rows nine to twelve inches apart. A good mulch of manure will be helpful, and they should never suffer for lack of water. The ordinary varieties require staking. They have usually two insect pests, a white grub, which attacks the roots and quickly ruins the plants attacked, and a black beetle, which devours the flowers as rapidly as they expand. The latter may be exterminated by patient hand-picking, but there should be no delay. As to varieties, one cannot go amiss in cultivating "Truffant's Pæony-flowered," with incurved petals, and the "Improved Victorias," with reflexed petals. These are to be had in six different colors, and it is more satisfactory to buy the colors separately. Most of the other strains have some merits, and the dwarf ones are admirable for garden decoration in the front of borders. The Comet Asters are a beautiful strain, with petals twisting and less formal than others of the family. The pink variety of this is a fine flower, but the gem of the strain is the "Large white," introduced last year by Vilmorin, which is a grand flower. The French florists now offer Comet Asters in all the colors through which the species ranges. The branching Aster, or Candelabrum, is a fine-flowered plant with long branching stems, which are especially useful for cutting, though the most effective way to use Asters is to cut the plant at the base and treat it as a bouquet. It is curious that one seldom or never finds a single Aster among the seedlings, yet self-sown seedlings, which often come up in gardens, are seldom other than perfectly single. Some of these are beautiful flowers, and probably would be much appreciated if they were rare.

Elizabeth, N. J.

J. N. Gerard.

Single White Pæonies.

IN the last volume of GARDEN AND FOREST, page 305, there was a beautiful illustration of a white-flowered variety of the Siberian *Pæonia albiflora*, and though I had never seen it, it was very evident that the great pure white petals, with their central cluster of yellow stamens, gave the flowers a singular delicacy and grace, and that, in spite of its large size, it had not a single element of coarseness. I have found since then that it is very difficult to secure these plants, although it was called an old-fashioned flower. In a late number of the London *Garden* I observe a colored plate with the description of another single-flowering *Pæonia*, *P. Emodi*, an Indian species. It looks as if it were closely related botanically to the Siberian plant, but it is described as quite distinct in habit and as especially valuable for its earliness, since it blooms in England some two or three weeks before the varieties of *P. albiflora*. The flowering shoots are described as from three to three and a half feet high, having one to five buds on each shoot, according to its strength, although it is rarely the case that more than two of them open together. The pure white flowers are from four to six inches in diameter, with a bunch of golden yellow stamens, and when the fruit is ripe the persistent calyx turns to a bright red, which later on dehisces, exposing bluish purple seeds and making a very pretty object. Since it is found at high altitudes in the western Himalayas, it ought to be hardy here, although it is said to succeed best in England against a south-east wall.

The article in GARDEN AND FOREST, before alluded to, calls attention to the fact that a single white-flowered variety of *Pæonia officinalis* was exhibited by the elder Thomas Hogg in New York as early as 1826, and a plant of this kind, under the name of *P. officinalis alba*, is described in *The Garden*. It would be interesting to know if any descendants of this *Pæony* still remain in cultivation in America. Among the other white-flowered *Pæonies* named is *P. villosa*, a little plant with stems not more than eighteen inches high, carrying a daintily cupped white flower on a short peduncle, surrounded by a collar of dark green leaves. Our plantmen are beginning to give some attention to single-flowered *Pæonies*, and it seems certain that any one who secures a stock of these white-flowering varieties will find a ready demand for them. As cut flowers for decorative purposes, and for masses in the garden they have few superiors.

Brooklyn, N. Y.

S.

Hardy Carnations.—What the English call border Carnations are comparatively rare in cultivation here, although our growers have made a striking success in getting improved types of the varieties used for winter-forcing and have acquired wonderful skill in the cultivation of these plants. These Carnations, which bloom so well in glass-houses, have been derived from the hardy type, and there is no reason why the hardy ones should not grow as well here as they do in Europe. Gardeners who come here from abroad find our climate hot

and dry, and they are therefore inclined to consider it unsuitable for these Carnations, and this is undoubtedly to some extent true; but it is also true that many of them will succeed here with ordinary care. A few people have grown them with great satisfaction for years, and visitors to the World's Fair in early August remember the bed of these plants which glowed upon the wooded island. This note is suggested by a paragraph in a late bulletin from Cornell University, where an account is given by the Professor of Horticulture of some trials with the seed which he secured in the spring of 1892. The varieties tried were Early Marguerite, Self-colored, Early Dwarf, Mixed Vienna, Red Grenadine, Splendid Rose-leaved, Picotee and a few others. The seed was sown in boxes in the greenhouse on the 8th of March, but it is stated that they might have been sown later and with equal success out-of-doors. The plants were set out in the field as the season advanced, and a few of them bloomed that autumn. They passed safely through a severe winter on a bleak hill-top without any protection whatever; they began to bloom about the middle of June, and kept up an uninterrupted display of bright and interesting flowers until late in August. Although this was a mixed collection from seeds of many varieties, all the strains were interesting, and the single flowers were especially so. The so-called Mixed Vienna seemed to be rather more attractive than the others, the color of its single and semi-double flowers ranging from ivory-white to rose-red, being very pure and dainty. Some of the plants, taken up in the fall and removed to the house for winter-blooming, proved very attractive. These hardy Pinks will live on from year to year, although it would be better to raise new plants from seed than to trust the old ones for a second season of bloom.

Ithaca, N. Y.

R. A.

Correspondence.

Mandarin and Tangerine Oranges.

To the Editor of GARDEN AND FOREST:

Sir,—In your notes on the fruit-markets of New York you often speak of Mandarin and Tangerine oranges as distinct fruits. Will you please tell me if they belong to different species, or are they varieties of the common Orange?

Buffalo, N. Y.

S.

[Mandarin and Tangerine have come to be the accepted names in the market of two varieties of *Citrus nobilis*, a species which differs from the common Orange in the more diffuse manner of its growth, narrow leaves and wingless petioles, and especially in the fruit, which is, as a rule, smaller and flatter at the ends, with the rind loosely attached to the dryish carpels, which are not so numerous as in the common orange, and separate more easily. The King orange, the Satsuma or Oonshin and the Bouquet des Fleurs are all varieties of the same species, and Kid Glove orange and sometimes Tomato orange are common names applied to all. In some places the terms Mandarin and Tangerine are used to include the whole class, but Professor Clute, of the Florida Experiment Station, who has kindly sent us some notes on the varieties as they are known in Florida, says that they are no longer used in this generic sense in that state. Mikan appears to be the generic term for all these fruits in Japan, while Kan is the Chinese term.]

The King orange, which does not mature until May, is highly prized for this lateness of ripening, as well as for its excellent flavor. The fruit is large and knotty, and could hardly be described as beautiful. The Satsuma ripens even earlier than the Mandarin or Tangerine, that is about the middle of October, and it usually commands a high price on account of its extreme earliness, although it is not as sweet as the other varieties of this species. The fruit is about the same size as that of the Tangerine. The color of its rind is somewhat intermediate, between that of the Tangerine and Mandarin, but its shape is more nearly that of a common orange, being round rather than flattened. As between the Mandarin and Tangerine, the former ripens earlier, or about the middle of December; the latter ripens a month later. The Mandarin is larger, is of a lighter orange color, it has a coarser pulp, its stem is surrounded by a larger knobbed eminence, its rind is more flabby, and the proportion of rind to pulp is larger. It is considered

sweeter, more sugar-like that is, than the Tangerine, but lacks its rich flavor. Because of this flavor, and because of greater juiciness, the market price of the Tangerine is generally ten per cent above that of the Mandarin. The Mandarin and Tangerine trees may be described as dwarf, while the Satsuma tree, although larger than either of the others, would be called semi-dwarf, since it rarely reaches the size of the ordinary Orange-tree. The lanceolate leaves of the Mandarin tree give it very much the appearance of an ordinary Willow. The foliage of the Tangerine more closely resembles that of the common Orange, though the leaves are smaller. The Satsuma is described as thornless, the Mandarin nearly so, while the Tangerine has more thorns than either of the others.—Ed.]

The Relation of Forestry to the State.

To the Editor of GARDEN AND FOREST :

Sir,—A highly interesting address was given by Dr. J. T. Rothrock, of the Pennsylvania Forestry Commission, on this subject, before the State Board of Agriculture, in Harrisburg, on January 24th.

Interest in forestry legislation is plainly growing here, and Dr. Rothrock, who has engagements to speak in nearly all the counties of the state, is unable to comply with the many requests now coming in. The lecture, fully illustrated by lantern-slides of views taken by the lecturer, was a forcible presentation of facts relating to the present condition of land in Pennsylvania, and it was followed by a prolonged discussion of minor points suggested, although over the main facts no controversy was possible.

After reading the law and amendments as they now appear on the statute-books in regard to timber bounties and tax rebates, of which, singularly enough, most of the audience knew little, Dr. Rothrock went on to speak of denuded, swamp, inundated and burned-over lands. The pictures needed almost no explanation, and were only too clear in giving renewed evidence of the sad facts familiar to every one in the audience, where utter desolation had followed the criminal extravagance and ignorant misuse of woodlands. The first illustration was a view of a hill-side farm, a barren, almost repulsive, spot, obviously unfit for agriculture. Yet of these so-called farm-lands there are in Pennsylvania not less than 3,000 square miles in supposed cultivation. Swamps, barren hill-sides, and the bottom-lands of the Juniata, once producing good crops, but now in many places ruined by floods, were shown. The most hopeless feature, however, was the devastation caused by fire. Optimists might consider some of the statements exaggerated for effect, but the silent slides carried conviction to all.

The Forestry Commission of Pennsylvania differs from that of several other states in covering not a section, but the entire state; so that two years, the time appointed in which to make examinations, surveys and reports, is none too long.

Harrisburg, Pa.

M. L. D.

Recent Publications.

The fourth volume of the *Contributions from the United States National Herbarium* is devoted to an account of the botany of the Death Valley Expedition, sent out in 1889 by the United States Department of Agriculture to make a geological survey of Death Valley, California, written by Frederick Vernon Coville, botanist of the expedition, and the present head of the Division of Botany of the Department of Agriculture. This is a most important contribution to our knowledge of the flora of an interesting region, and contains a vast amount of information on the distribution of the plants of our south-western states and territories. The first part of the report is devoted to the author's itinerary, which consists of a record of Mr. Coville's location on each day that he was in the field, with references to such prominent features on the route as were of particular botanical interest. This is followed by an essay on the conditions influencing plant-distribution, with an analysis of the flora of south-eastern California into its smaller component floras, and a consideration of the relation of these to each other and to the floras of adjacent parts of the country, with remarks on the characteristics and adaptations of the desert

flora and a discussion of its modifications under existing environmental conditions.

The next part of the work consists of a catalogue of the species collected, with bibliographical references and geographical notes. This catalogue is followed by a catalogue of specimens collected by the expedition, arranged by numbers, and by a bibliography of works referred to in the report, which is, moreover, illustrated by seventeen plates lithographed on stone and by an excellent route map.

Forty-two undescribed species and varieties were brought to light by the expedition. This is certainly not a very large number in view of the extensive area traversed and of the imperfect character of our previous knowledge of its flora. Two new genera are proposed—*Orochænactis*, based on a plant previously referred to *Chænactis*, and *Phyllogonum*, an annual plant allied to *Eriogonum*. Twelve hundred and sixty-one species and varieties are enumerated, of which rather less than half were found in the desert region of California, the remainder having been collected on the Sierra Nevada and its southern continuations and in the Tulare plains.

Among the numerous changes of nomenclature we notice that *Fremontodendron* replaces *Fremontia* for the beautiful yellow-flowered tree so common on the foot-hills of southern California, *Fremontia* having been used by Dr. Torrey for a plant now known as *Sarcobatus vermiculatus* before he used it for this tree, so that under the rules now in force among American botanists *Fremontia* must be forever delegated to our fast-growing collection of synonyms. *Larrea Mexicana*, the common Creosote-plant of the desert, now becomes *Larrea tridentata*, which Dr. Coville tells us is "the most important zonal plant of the lower Sonora zone, growing with great uniformity over nearly the whole area of the desert region."

The first number of Bulletin No. 9 of the Geological and Natural History Survey of Minnesota, to be devoted to botanical studies, has reached us. This is a new botanical publication, provided for by the Legislature of Minnesota and intended to contain papers whose immediate publication, in advance of the regular reports of the Board of Regents of the Geological and Natural History Survey of the state, is considered important. The first issue contains papers on the occurrence of *Sphagnum* atolls in central Minnesota, by the editor, Professor MacMillan; on some extensions of plant ranges, by E. P. Sheldon, who also contributes a paper on the nomenclature of some North American species of *Astragalus*; a list of fresh-water Algæ, collected in Minnesota during 1893 by Josephine E. Tilden; and on the poisonous influence of *Cypripedium spectabile*, and of *Cypripedium pubescens*, by D. T. MacDougal. On the last topic the author says:

An examination of these plants reveals the presence of two forms of hairs in great abundance; one is a curved pointed septate hair, the apical cell of which has hard brittle walls, and is easily detachable from the basal portion of the organ; the other form is a septate glandular-tipped hair. The glandular cell is filled with a light brown substance of which the chemical nature remains unknown. The contents of both hairs show a decided acid reaction, but were not observed to exert any harmful influence on infusoria placed under the cover-glass with them. The poisonous effects may be due to the piercing of the skin by the pointed hair and the consequent action of the acid contents, or to the surface irritation by the contents of the glandular hairs, or it is remotely possible that they are due in some way to the presence of a fungus.

Mr. MacDougal considers that the poisonous effect of *Cypripedium spectabile* is conclusive, and argues that as *Cypripedium pubescens* is furnished with a similar apparatus, there is every reason to believe that it is equally injurious. He suspects, however, that both plants "may be handled by the majority without danger—yet it is easily apparent that these species, as well as others of the genus, are protected in a manner that renders them unpleasant to grazing animals, as it has been repeatedly

noticed that large numbers of these plants growing in woodland pastures have been found intact, while the surrounding herbage would be closely cropped."

† *Cypripedium pubescens*, it appears, has been formally adopted as the state flower of Minnesota.

Notes.

The collection of North American woods exhibited at the Columbian Exhibition by Mr. Morris K. Jesup, President of the American Museum of Natural History, in this city, which attracted so much attention last summer in the Forestry Building, has been presented by Mr. Jesup to the Arnold Arboretum.

A new pink Carnation was exhibited at the February meeting of the Philadelphia Florists' Club by Mr. A. M. Herr, of Lancaster, and named Annie Pixley. The flowers shown were of good size and borne on stiff stems, the color being somewhat like that of Edna Craig, but without the fimbriated petals of that variety. Annie Pixley is said to make strong growth and to flower abundantly, but, like many other varieties, it may prove quite another plant in another locality.

Mr. John F. Barker, Superintendent of the Forest Hill Cemetery, near Boston, has decided that a complete commercial fertilizer—that is, one in which the proper proportions of nitrogen, potash and phosphoric acid are all combined—is preferable to stable-manure for flowers. Stable-manure always contains many seeds of weeds and grass, and in this way necessitates much work to keep the beds clean. Besides this, soluble fertilizers supply the plant with food at once, and thus hasten their growth. The expense of applying the fertilizer is much less than it costs to handle manure. When asked if manure was not needed to give a certain amount of humus or vegetable matter to the soil, Mr. Barker gave it as his opinion that where vegetable matter was needed to lighten up the soil, a thorough trenching of the ground, which he invariably practiced every spring, whatever kind of fertilizer was used, would keep the soil in a sufficiently porous condition.

The last bulletin from the Cornell Experiment Station, in speaking of the recent varieties of Tomatoes in which the year 1893 was very prolific, pronounces Buckeye State (Livingston), a very large, round, heavy, purple, smooth Tomato, as the best novelty. Among other good ones were Aristocrat Dwarf (Livingston), with small but very uniform fruit, red, round, solid, and apparently a valuable variety for amateurs. Extra Early Advance (Burpee) was the earliest Tomato of the year. It bore small red fruits of uniform size and shape, and not far removed from the Cherry type, and was thought valuable on account of its earliness. Lemon Blush (Thorburn) has fruit of medium size, bright lemon color, with a faint blush, is early and good. Terra Cotta (Thorburn) bears medium large, tough, red, regular fruit, and is interesting on account of its novel color, and is apparently valuable. May's Favorite (Hawley & Co.) has medium red, uniform, regular fruit, and is promising. Salzer's First Prize (Salzer) is a variety with flattish, red fruit of medium size.

Professor Bailey reports some experiments with a new food-plant. The tuber from which the plants have been raised was picked up on the coast in Florida and sent to the station at Ithaca by Dr. Irwin F. Smith. Plants from this tuber have been grown for two years, and they proved to be *Stachys Florida*, a plant which had probably not before been cultivated. In general appearance this resembles the *Chorogi* or *Stachys Sieboldii*, which was introduced a few years ago, and is still sold as an esculent. This plant differs from the *Chorogi*, however, in its more slender habit, its smoothness and its long-stalked cordate leaves. The tubers are somewhat larger, generally reaching a length of from four to six inches. It is rather more crisp and brittle than the *Chorogi*, while the flavor is equal and perhaps superior. It has not yet been grown in the open ground, but it will probably endure northern winters with the protection of a mulch, since tubers which have been frozen grow readily, so that there is every reason to believe that this species will add another attractive vegetable to our kitchen-gardens.

Mr. A. B. Dennis, of Cedar Rapids, Iowa, at the late meeting of the Horticultural Society of that state gave an interesting account of his experience with Burbank, Ogon and several other Asiatic Plums which had survived a temperature last winter of twenty-six degrees below zero, and remained healthy to the very tip of their branches, and full of fruit-buds for another year, after having borne a heavy crop this year. Mr. Dennis observed that these Plums are much more nearly allied

to our hardy native Plums of the Chickasaw, Wild Goose and Miner groups than they are to the European varieties. Like our native species, they shed their leaves and ripen their wood early, while the fibrous quality of the fruit, the color and roughness of the bark, the multiple leaf-buds and other points of similarity are what would naturally be expected from the well-known fact of the close relation of the flora of eastern Asia to that of eastern America. We have only begun to improve our native varieties by selection, and the Chinese have been improving these allied species for generations. No doubt, the crossing of these oriental varieties with our native Plums offers a promising field for the hybridizer.

Patrick Barry, a large yellow russet pear of California origin, with white flesh and rich vinous flavor, is found in considerable quantity in market now. In boxes of selected fruit the pears are of immense size, and weigh a pound and a quarter each. Other varieties of pears which can be had now are Winter Nelis, from California, and Buerre Bosc, from Boston. Among apples, Albemarle Pippins are unusually cheap, owing, it is said, to a light demand for them in England. They sell at five dollars a barrel for choice fruit. Grapes are still being shipped from the interior of the state, and are arriving here at the rate of one car-load a week. They are mostly Catawbas, and five-pound baskets retail at twenty and twenty-five cents. Most of the Florida strawberries reaching this city now are green or otherwise inferior in quality, and sell at forty cents or less a quart, but the small supply of first-rate berries commands seventy-five cents. Occasionally there is seen a box of King oranges—or as they are called here, King of Siam—from the Halifax River, Florida, although this is rather early in the season for them. This orange belongs to the Mandarin or *Citrus nobilis* type, and in size and flavor excels all others of its class. A box containing from seventy-two to ninety-two oranges brings eight dollars at wholesale, and this fruit has been sold at retail for as much as \$2.50 a dozen.

In the south-eastern part of France, along the shores of the Mediterranean and the vicinity of Cannes, Antibes, Nice, Grasse and Mentone, about seventeen hundred acres of land are devoted to growing flowers for commercial purposes. Roses and Carnations are the principal flowers grown, but Violets, Forget-me-nots, Lilacs, Camellias, Narcissus, Anemones and many others are raised in immense quantities. The flowers are all sent to the countries of northern Europe. Assuming Sweden, which stands lowest in the amount received, to be represented by 1, the amounts sent to other countries will be represented in the following proportions: Austria, 4; Switzerland, 16; Belgium, 10; England, 24; Germany, 32; France, 64. The cultivation of flowers for commerce began no longer than thirty years ago, and it is only within the last three or four years that it has attained these important dimensions. The trade has been so prosperous that most of the market-gardens of that region have been replaced by flower-fields. Olive-trees have been uprooted, and there is hardly a peasant who does not watch the fluctuations of the floral market during the winter season and bring his small daily contributions to the dealers, who take them to the large wholesale exporters.

The Department of Agriculture has just issued a bulletin which contains abstracts of the most important of the state laws which have been passed within a few years on the subject of roads. The bulletin has been compiled by Mr. Roy Stone, who was appointed last autumn as special agent in charge of the road inquiry. Most of the old laws were so ineffective that the practical work of modern road-improvement has all been done under the new statutes. Fourteen states have passed new road laws which contain radical changes of methods, and there is much agitation for similar reform in many other states. In a letter of instructions which defined the scope of the present investigation, Mr. Stone was directed (1) to make inquiries in regard to systems of road-management throughout the country; (2) to make investigations in regard to the best methods of road-making; (3) to prepare didactic publications on the subject suitable for distribution; (4) to assist the agricultural colleges and experiment stations in disseminating information on the subject. This bulletin is confined to the first subject, and it will be followed by another, or, perhaps, a series, to give the best methods of constructing (1) common highways without gravel or stone; (2) graveled highways; (3) macadam and other stone roads. Besides this, data are to be collected relating to the transportation of accessible material for the proper surfacing of road-beds. Of course, the function of the Department of Agriculture in this matter is simply to furnish information.

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Mr. Vanderbilt's Forest.

THE appearance of the short report which has been lately published on the forest operations instituted on Mr. George W. Vanderbilt's estate of Biltmore, near Asheville, North Carolina, marks what must be considered a most important step in the progress of American civilization, as it records the results of the first attempt that has been made on a large scale in America to manage a piece of forest property on the scientific principles which prevail in France, Germany and other European countries where a dense population has compelled a more careful husbanding of all natural resources than the American people, made reckless by the apparently inexhaustible richness of their country, have not thought it necessary to emulate. A century of waste, of careless cultivation, of an excessive cutting of forests, and of a still more destructive reign of forest fires, have, however, worked their inevitable results, and thoughtful men long ago began to recognize the fact that unless some method of perpetuating the forests of the country could be devised, its agricultural ruin was merely a question of time.

A great deal has been written during the last ten years in the United States about the importance of preserving the forests of the country, and the subject is one that has appeared attractive to orators of various degrees of ability. But example is better than precept, and it has been left to Mr. George W. Vanderbilt to set an example in forest management which is likely, as the years roll by, to have a momentous influence on the prosperity of this country.

The report on the Biltmore forest is written by Mr. Gifford Pinchot, a student of forest management in the best schools of Europe, and a man fully alive to the advantages and disadvantages of the different methods in their application in this country. The Biltmore forest, as mapped and described in this report, is composed of about 4,000 acres, or just one-half of the whole estate, although, since this forest was first laid out, Mr. Vanderbilt's holding of forest property in the same region has been very largely increased, so that his forest operations may be expected to assume in the future much more important dimensions.

The Biltmore forest, as Mr. Pinchot found it, was composed chiefly of Oaks and other deciduous trees, mostly

young, with scattered Pines which occasionally covered old and exhausted fields to the exclusion of other species. The forest was broken and irregular in character, owing to the fact that the land had been divided among many small farmers who had made frequent clearings or had robbed the forest, depleted of its young growth by browsing animals, of its most vigorous and healthy trees. The soil produced by the disintegration of an ancient gneiss, intermixed with pegmatitic quartz, is a stiff sandy loam of considerable depth, but not rich in plant-food or specially favorable to the growth of trees.

Mr. Pinchot's scheme, as he sketches it in his report, proposes three general objects—a profitable production which will give the forest direct utility, a nearly uniform annual yield which will give steady employment to a trained force of foresters, and a gradual improvement in the present unsatisfactory condition of the forest. These objects he proposes to obtain by two methods of management. On the east side of the French Broad River, which divides the estate, the regular high-forest system will be adopted, and on the west side the selection system. The rotation—that is the length of time allowed for a second crop to become ripe on the same ground after the removal of the first crop—has been fixed at one hundred and fifty years. In a theoretically perfect forest, managed under this high-forest system, there are as many subdivisions as there are years in the rotation, the trees of each subdivision being of an equal age and only one year older or younger than those of the next subdivision. In this way it would be possible to cut every year one one-hundred and fiftieth of the whole area, thus securing a uniform annual crop during the whole period. In the selection—forest trees of all ages are mixed together instead of being separated in groups according to their ages. The annual product is taken from all parts of the forest, the ripe trees being selected for cutting; but such a method necessitates, in the case of a large forest area, expensive transportation, and to avoid this Mr. Pinchot has adopted what he calls the localized selection system, under which the annual yield is taken from a certain part of the forest during several years, then from another part, and so on.

Mr. Pinchot's balance-sheet, covering the first year's operations of the Biltmore forest, shows an expenditure of \$9,911.76, with receipts amounting to \$5,607.11, and material on hand worth at local market prices \$3,911.25, or \$9,519.36 in all, showing a deficit of only \$392.40. In the year 1893, as we are informed, this deficit became a surplus of more than \$1,200—certainly a remarkable result, in view of the poverty of the forest he had to operate in and the difficulties which are always attendant upon the establishment of a new industry, especially in one like this, where all his assistants and workmen had to be formed from the very beginning.

Mr. Pinchot may, perhaps, consider himself unfortunate in the character of the existing forest-covering of the land which has been placed in his hands to manage, as the poverty of the soil over much of the area embraced in the Biltmore forest will prevent its rapid rehabilitation and probably preclude the production of timber of the first class. On the other hand, however, he is especially fortunate in having secured a constant demand for fire-wood within easy reach of the forest and on the estate itself, without which, or some steady local demand, it would be impossible for him to carry out his plans of improvement by cutting except by a prohibitive outlay of money.

A forest, like any other piece of agricultural property, is more or less profitable in proportion to its ability to produce material for which there is a demand at remunerative prices; and while it is certainly true that a virgin forest composed of trees of the first class would yield larger returns under scientific management than can ever be obtained from the Biltmore forest, it must be borne in mind that an example like this, provided the forest can be made to yield a fair return on the investment, will be of greater value to the country as an object-lesson than one where

the returns were larger from land of a better character, for what we want in this country is to learn how land too broken and too poor for tillage can be made to earn permanently and regularly a fair interest on its value through the application of the laws which govern the art of forestry.

Such a lesson the country will soon be able to learn from the Biltmore forest, which, if it is supplemented as it is now proposed, by a great arboretum in which are to be gathered all the woody plants of the temperate regions of the world, and by a series of small special plantations of various trees, native and foreign, made for the purpose of testing their value for forest-planting on a larger scale, will form a museum of remarkable comprehensiveness and interest; and Mr. Vanderbilt will have performed a service to his country of the highest practical value in furnishing opportunities for study which will be of untold value in the future to the scientific forester, the landscape-gardener and the dendrologist, and through them to the nation.

Notes for Mushroom-eaters.—V.

TUBE-BEARING FUNGI.

WE may now leave the gill-bearing fungi and pass to those where the under side of the pileus is formed, not of radiating gills, but a series of narrow tubes packed closely together (see Figs. 13 and 14). The mouths of the tubes can usually be recognized with the naked eye, but in some cases they are so small that one needs a hand lens to see them clearly. This group, the Polyporiæ, includes many species, but not as many as the group of gill-bearing fungi, and the edible species are comparatively few, for many of the species are hard or corky. As common illustrations of fungi of this group, we may mention the large forms growing on trees, which are used by ladies for making brackets and vegetable cameos, and the common hemispherical or disk-like species which abounds on Birch-trees. To the fungus-eater such hard and corky species have, of course, no value. By far the greater part of the fleshy, succulent, toadstool-shaped fungi of the present group belong to the genus *Boletus*, a very dangerous genus on the whole. The species of *Boletus* abound in woods and fields during the summer and autumn, and sometimes attain a great size. Unfortun-



Fig. 13.—*Boletus subtomentosus*.

nately, the recognition of the different species is a difficult matter, even for experts, and, since many of the species are dangerous, the beginner should be especially cautious. No species of *Boletus* is probably as poisonous as the *Agaricus phalloides*, described above, but serious accidents have happened in this country to persons who have experi-

mented with *Boleti*. It is out of the question that we should enter upon a detailed description of the different species. We can only mention the general characters found in the dangerous *Boleti*. In some species, when the fungus is cut or broken, the flesh changes color, becoming usually blue, and sometimes reddish. In some cases merely handling the



Fig. 14.—Section of *Boletus subtomentosus*.

fungi brings out the blue color, in others the change takes place slowly. As yet, no satisfactory explanation of the change of color has been given, but, whatever the cause, the change is not permanent. In selecting *Boleti* we may lay down the rule: avoid all those in which the flesh changes color on exposure to the air or on pressure. Again, one should notice the color of the tubes and of their mouths. The species which have red-mouthed tubes, or where the mouth is of a much deeper color than the rest of the tube, are also to be avoided. A few *Boleti* have a peppery or acrid taste, like certain of the *Russulæ* and *Lactarii* mentioned above, and it is the part of prudence to avoid them. Excluding the species which have an acrid taste, those in which there are red-mouthed tubes and those in which the flesh changes color, there is still left a good many species, but, even then, one should experiment cautiously, although the danger is not great.

Certain species of *Boletus* are among the best of fungi, and their large size makes them very desirable. The *Cèpe*, *Boletus edulis*, is imported into this country from France, principally from Bordeaux, although, according to Gautier, the species is not one whose sale is authorized in the Paris market. It is also common in a good many places in this country, especially in stony places near the borders of woods; but it is far from easy to describe it so that a beginner can always distinguish it from other species. The pileus is convex, from purple-brown to yellow-brown, or even paler, smooth, thick and fleshy; the flesh white and unchangeable; under surface convex and grooved around the top of stipe; tubes as much as an inch long, at first white, but becoming yellow and then greenish; stipe rather stout and often bulbous at base, paler than the pileus, having at the top a slightly reticulated surface. If all the above marks are present there can be no trouble in recognizing the *Cèpe*, but it must be admitted that the description is rather long to be recollected without an effort. The imported *Cèpes* are gathered growing wild, and not cultivated in beds like the Mushroom, and hence one must necessarily be a little suspicious of those sold in our market. When well-cooked the *Cèpe* is delicate and easily digested, but when prepared, as it generally is, à la Bordelaise, it may cause gastric irritation, which might lead one to suppose that the species was poisonous.

In this connection should be mentioned the Beefsteak fungus, *Fistulina hepatica*, common in the south, but less common in the north, although it is sometimes found there

in sufficient quantity for eating. It grows on stumps of Oak or Chestnut, and may attain a large size, especially in the south. As its French name, *Langue de Bœuf*, implies, it resembles a thick tongue projecting from the stump, with a very short stipe. When young the surface is covered with a beautiful peach-colored or red down, but when mature the upper surface is deep red and mucilaginous. The under surface is pale buff color and covered with minute papillæ like a tongue. This is due to the fact that here the tubes are not in close contact with one another, but nearly free. Sections of the fungus show a streaked red surface like a steak. The taste, when gathered, is slightly, but agreeably, acid. The fungus is unmistakable, and when broiled has a most extraordinary resemblance to a tenderloin-steak. It is to be regretted that it is not more common with us.

With regard to the teeth-bearing fungi, *Hydneæ*, little need be said. They are not very numerous, and the greater part of them are either too tough or too small to be of value as food. We have the large, scaly, dark brown or blackish form, much esteemed in Germany, under the name of *Habichtschwamm*, *Hydnum imbricatum*, and the more delicate *Hydnum repandum*, with a pileus varying from dull yellow-red to nearly white, with teeth lighter-colored than the rest of the fungus. Practically none of our teeth-



Fig. 15.—*Clavaria aurea*, Coral-fungus. Small specimen, life-size—edible.

bearing fungi are poisonous, but, as a rule, they have a somewhat bitter taste, liked by some persons, but not by the writer.

Besides the three groups of the gill, tube and teeth-bearing fungi, there is a small group of coral-shaped fungi, some of which are of good size and very palatable. We need only refer to Fig. 15, which will give the reader a sufficiently clear idea of the common and larger species of this group. None of the coral-shaped fungi are poisonous, and the beginner can venture to eat any of them without hesitation.

Harvard College.

W. G. Farlow.

Foreign Correspondence.

London Letter.

MUSA AURANTIACA.—This is a handsome-flowered dwarf *Musa*, which was discovered in Assam by Mr. Gustave Mann, who sent it to Mr. Wendland, of the Herrenhausen Botanic Garden, some years ago, where it flowered lately, and the inflorescence has been forwarded to Kew. It is like the old *M. coccinea* in habit and stature, the stems being only two or three feet long, the leaves three feet long, and the terminal, erect, stout scape nearly a foot long. The charm of the plant is in the rich orange color of the large bracts which clothe the upper part of the scape and partly

enclose the yellow flowers, which occur usually in threes. There are examples of this species in the Palm-house at Kew, where it forms crowded clusters of stems in pots about fifteen inches in diameter. It is a worthy companion to *M. coccinea* and *M. Mannii*, and these three *Musas* deserve to be in every good collection of stove-plants.

BEGONIA PAUL BRUANT.—Among the best of all winter-flowering *Begonias* is this species. There are plants of it in the Kew collection which have been in flower for the past fortnight, and promise to continue in full display for several weeks more. They are well formed, two feet high and through, with elegant foliage; the stalks nine inches long, red, hairy; the blades of the usual oblique, sinuously toothed character, and from six to nine inches long. The racemes are on scapes as long as the leaf-stalks, and each raceme is a broad, branched, elegant bunch of pink flowers and bracts. The female flowers predominate, and their beauty is largely due to the conspicuous broad-winged ovary, which is of a darker shade of rose than the petals; each flower is over an inch across. There are no *Begonias* at Kew so beautiful in January and February as this one. It was raised and sent out by Bruant, of Poitiers, in 1892. I suspect its parents are *B. manicata* and *B. phyllomaniaca*.

DENDROBIUM ATROVIOLEACEUM.—This is a much more attractive *Orchid* than was anticipated when it was first introduced by Messrs. J. Veitch & Sons in 1889, and named by Mr. Rolfe. A specimen of it in flower, shown a few weeks ago, was awarded a first-class certificate by the Royal Horticultural Society, and it has since been figured or described and recommended by most of the gardening papers here. In general characters it approaches *D. macrophyllum* (Veitchii), and it is a native of the same place as that species—that is, New Guinea. It differs, however, in its shorter pseudo-bulbs and leaves, and in the brighter color and glabrousness of its large flowers. The racemes are erect, eight inches long, bearing from four to eight flowers, which are two and a half inches across, creamy yellow, with purple spots, except the lip, which is rich violet-purple inside, deep green outside. It is a much more attractive *Orchid* than *D. macrophyllum*.

DENDROBIUM WARDIANUM.—An importation of magnificent plants of this beautiful species was sold by auction this week. *Orchid* importers are so much cleverer now than they were fifteen or twenty years ago that they can import all the better-known and easily collected species in as healthy a condition as though they had been taken from the trees upon which they grew immediately into the sales-rooms. I have seen this species of *Dendrobium* fetch very high prices at sales, but it was in the days when the plants used generally to arrive in bad condition; now one can get very good specimens of it for about the same price as *Camellias*. Although *D. Wardianum* is fairly good-natured under cultivation, it is one which gradually weakens and rarely survives five years' treatment in an *Orchid*-house. Luckily, however, it is apparently plentiful in Assam. There are few more beautiful objects than a good specimen of *D. Wardianum* when in flower.

CYPRIPEDIUM CHARLESWORTHII.—This new and distinct species bids fair to soon become as plentiful and cheap as the commonest of all *C. insignis*. Several large importations of it have lately been sold by auction in London since it was first introduced some three months ago, and plants which then sold for guineas would not now fetch shillings. Messrs. Low & Co. offered this week a large consignment of plants in perfect health, although only just received from the home of this species, which I suspect is upper Burma. While small plants realized about ten shillings a dozen, large tufts, with twenty or thirty growths, were sold for about two pounds. It is satisfactory to be able to state that this species is at least as happy under cultivation as its near ally *C. Spicerianum*, and good, easily grown *Orchids* are always welcome, in however large quantities they may come.

IRIS BAKERIANA.—All the *Iris*es of the *reticulata* group are delightful spring-flowering plants, which any one may

grow, either in pots for the conservatory or in the open border. Several of them have been in flower a week or more outside at Kew, but the most charming of all, so far, is *I. Bakeriana*, as represented by a potful grown in full blow in the Alpine-house along with rare Snowdrops, Crocuses, tufted Saxifrages, etc. The Iris is exactly like *I. reticulata*; indeed, is in my opinion only a variety of it. The flowers, which are on erect scapes six inches high, are of the most charming satiny blue color, and the lip-like claw is colored rich violet-blue. Flowering in January, lasting over a fortnight and being delightfully fragrant, this is an Iris of special value. It was introduced from Armenia in 1889, and was named by Professor Foster in compliment to Mr. J. G. Baker, F.R.S., of Kew.

NARCISSUS TRIMON.—This is an interesting and pretty hybrid between *N. triandrus* and *N. monophyllus*, which was raised by Professor Michael Foster in 1890. It possesses all the charm of both of its parents, and is an improvement upon *N. monophyllus* in its sturdier constitution. Plants of it are now in flower in the alpine-house at Kew. The leaves are Rush-like, and the scapes are nine inches long, usually two-flowered, each flower being two inches across; the segments an inch long, spreading, and the cup two-thirds of an inch deep, with an even edge. The whole flower is milk-white. In the same house there are examples in flower of *N. monophyllus*, a delightful little Daffodil, with its delicate snow-white flowers, with orange anthers. Professor Foster's name for his hybrid is an attempt to indicate the parentage by combining the first syllable of each name. In my opinion, the plant deserved a prettier name.

DARWIN TULIPS.—English horticultural papers are actively discussing these plants just now, some of them holding that the "race" recently named in compliment to the great naturalist, and offered by Messrs. Krelage & Sons, of Haarlem, is not in any way distinct from the old "Breeder" Tulips, which are forms of *T. Gesneriana*. In my opinion, there is a difference, the plants offered by Messrs. Krelage being much superior in color attractions to the "Breeders" of English gardens. The former have been grown at Kew several years now, and their extraordinary colors attract considerable attention. No less an authority than Sir Frederick Leighton, on seeing them at Kew two years ago, expressed himself delighted with them because they were so different from and so much more artistic in color than the Tulips usually grown in gardens. If the quibbling over the name only leads to the general cultivation of these Darwin Tulips it will have been productive of some good. I would rather call them Darwin than Breeder Tulips, even if they were identical, the latter name suggesting something unfinished or imperfect, whereas the flowers themselves are beautiful in their colors, kaleidoscopic, never harsh or disagreeable to the eye, and often showing the most subtle blending of browns and purples and greens; in short, all colors. Breeder Tulips have never held a very prominent place in English horticulture, not within the last twenty years, at any rate; but, unless I am much mistaken, these Darwin Tulips of Messrs. Krelage are certain to become favorites with all who love true beauty of colors in a flower. It appears as if *T. Gesneriana* has been as prolific in variety as *Hyacinthus orientalis*, the parent of all garden Hyacinths, or *Pelargonium zonale*, whose progeny is the garden Geranium in its hundreds of varieties.

PETASITES FRAGRANS.—An excellent use for this plant is as scent-maker in the conservatory or greenhouse. In England it is wild, though not a native, and it is not uncommon in gardens, where it is known as Winter Heliotrope, flowering in December and January in ordinary winters. Some tufts of it should be included in every conservatory for the sake of its powerful and agreeable odor. In the border outside it is apt to become a weed and choke out everything else, but in a conservatory it is weaker and therefore easily kept within bounds. In the alpine-house at Kew several tufts of it are planted under the stage, where they are now in flower. The foliage is handsome, and the racemes are nine inches high, branched, and crowded with

heads of whitish flowers with purple anthers. It is also a good plant for the margins of streams. It is worth a trial in the conservatory, and even might be grown for the sake of its flowers for cutting purposes. They are white in the greenhouse.

London.

W. Watson.

New or Little-known Plants.

Darbya umbellata.

THE Sandal-wood family, which is chiefly tropical, appears in the eastern United States with half-a-dozen species of plants, in four genera. Of these, *Comandra*, small parasitic herbs, is common at the north with three species, and *Pyrularia*, the Oil Nut, which is also represented in the Himalaya forest, is a common shrub in the southern Alleghany Mountain region. *Buckleya*, the third genus, has one representative in North America, one of the rarest of all American plants (see GARDEN AND FOREST, vol. iii., p. 237), and another in the mountain forests of central Hondo, in Japan. The fourth genus, *Darbya*, is monotypic, and, although it was discovered more than fifty years ago, it is only recently that the discovery of the pistillate plant and of ripe fruit has made it possible to complete the description of its characters.

Darbya is a glabrous shrub, with slender, terete or quadrangular dark-brown branchlets, often roughened with dark lenticels, long, thick stoloniferous roots, and deciduous leaves without stipules. The leaves are ovate, narrowed at both ends, reticulate-venulose, entire, with slightly revolute margins, thin and membranous, dark-green on the upper surface, pale on the lower surface, an inch and a half to two inches long, and three-quarters of an inch to an inch wide on the fertile plant, or not more than half as large on the sterile plant, with slender, pale mid-ribs, remote oblique veins forked near the margins, and short stout petioles. The staminate and pistillate flowers are greenish-white, apetalous, and produced on separate individuals from the axils of leaves of the year, the former on slender pedicels in five or six-flowered pedunculate umbels, the peduncles nearly as long as the leaves, the latter, solitary and articulate on short stout peduncles. The calyx is usually four, sometimes three or five, lobed, and slightly puberulous on the outer surface of the short, thick acute lobes which are valvate in the bud, and after anthesis are spreading and reflexed; it is turbinate in the staminate flower, and nearly twice as long and cylindrical in the pistillate flower, and is lined with a thick, cup-shaped, slightly lobed disk, on the margin of which and on the lobes are inserted, opposite the divisions of the calyx, the four, or sometimes three or five, introrse, slightly exserted stamens, with short, stout, flattened filaments furnished at the base, on the outer side, with small tufts of pale hairs, and oblong anthers attached on the back below the middle, and two-celled, the cells opening by longitudinal slits. In the pistillate flower the stamens are rather smaller, included, and apparently fertile. The ovary is inferior and abruptly narrowed into a short, exserted, thick, conical style, tipped with a four-lobed spreading stigma; before fertilization, the cell and its ovaries are not distinguishable, the whole of the flower below the disk consisting of a homogeneous pulpy mass; in the sterile flower there is no trace of an ovary, the cavity of the disk extending to the bottom of the calyx. The fruit is a nearly globose drupe, crowned with the remnants of the calyx-limb, with thin, dry, mealy flesh, a thin-shelled light brown nutlet, and a globose seed, covered with a thin membranous scurfy testa closely investing the large mass of fleshy albumen. The embryo is axile and erect, with linear cotyledons much longer than the short erect radicle turned toward the hilum.

Darbya, of which only one species is known, *Darbya umbellata*, was established by Dr. Asa Gray, who characterized the staminate plant only in the *American Journal of Science* in 1846 (ser. 2, i., 388). It had been found a few

years earlier by Dr. Boykin near Milledgeville, Georgia and near Macon by Professor Darby, and in the neighborhood of Lincolnton, in North Carolina, by Mr. M. A. Curtis. Nothing more was seen or heard of *Darbya* until the spring of 1882, when Dr. Charles Mohr found the staminate plant on Sand Mountain, in Cullman County, Alabama, south of the Tennessee River. In the spring of 1886 Miss K. A. Taylor, of Baltimore, found staminate plants near Columbia, South Carolina, and two years later the pistillate plant in the same locality; and the following notes

Oak, Hickory and other deciduous-leaved trees and shrubs. The soil is light, loose white sand, without stones, and is overlaid with a thick covering of leaf-mold.

The *Darbya* flourishes alike in sunny and shady situations. The roots are several yards long, an eighth to half an inch in diameter, dark red on the outside, white within, with rootlets at intervals of an inch or more; they branch every foot or so, and run in straight lines through the leaf-mold about two to six inches below the surface, crossing each other frequently and sending up shoots sometimes an inch and sometimes several feet apart. The leaves are always much larger on the pistillate than on the staminate plants. The two grow thickly

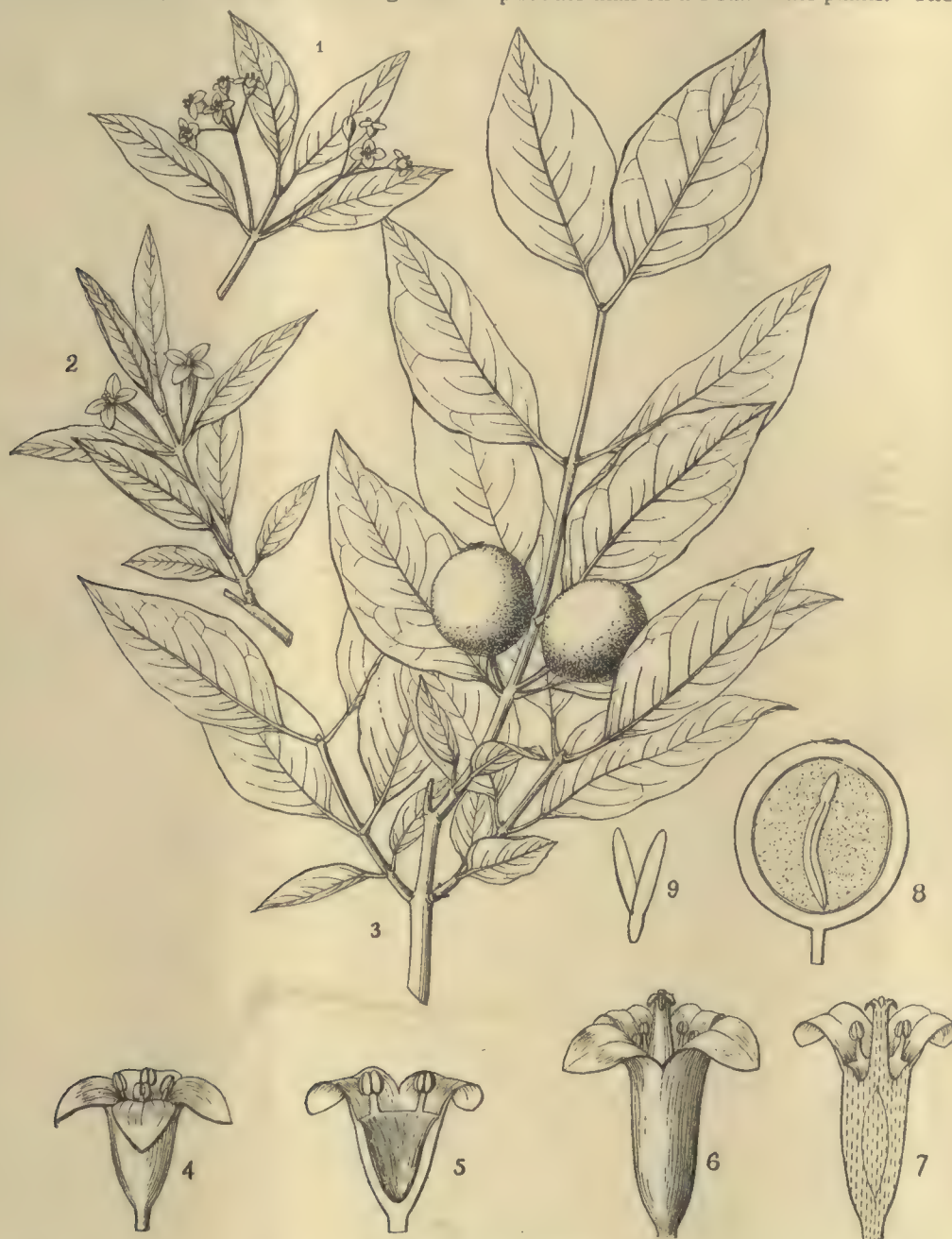


Fig. 16.—*Darbya umbellata*.

1. A flowering branch of the staminate plant, natural size. 2. A flowering branch of the pistillate plant, natural size. 3. A fruiting branch, natural size. 4. A staminate flower, enlarged. 5. Vertical section of a staminate flower, enlarged. 6. A pistillate flower, enlarged. 7. Vertical section of a pistillate flower, enlarged. 8. Vertical section of a fruit, enlarged. 9. An embryo, much magnified.

from her pen give the best account of the habit and mode of growth of this extremely rare and interesting plant, which has not yet been brought into cultivation:

A few years ago (1886) I collected some specimens of the staminate plant, not then knowing its name or rarity. This year, in the middle of April, I made a thorough search in the same woods, about two miles south of Columbia, and found both staminate and pistillate plants growing in the greatest abundance and covering acres. The ground is high, and covered with woods composed of a few Pines, but principally of

and cover much ground, although the plants of the two sexes are never mingled, the groups being in no case, I think, nearer to one another than one hundred and fifty to two hundred yards. The plants grow from twelve to thirty-three inches high, and both kinds of flowers have a sweet musk-like odor. I noticed many small black ants visiting the flowers, and finding, apparently, something attractive at the base of the stamens.

In 1888 Dr. Hyams also found fruiting plants of *Darbya* near Charlotte, North Carolina.
C. S. S.

Cultural Department.

Propagation of Chrysanthemums.

OPINIONS vary as to the proper time to insert cuttings intended for specimen plants. For many years I put them in about the middle of January, and while this gave them a longer season of growth, it often happened that cuttings taken so early ran to bloom when transferred to six-inch pots in March. With no preparation for replacing the plants, these varieties were lost for that season. Many of the best varieties will bloom in this way, Viviani Morel being a noted instance. My experience has been that cuttings struck toward the end of February make good specimens. Preference should always be given to root-cuttings over stem-cuttings, particularly if the cuttings are from suckers. This is not always possible, however, and I well remember an old and beautiful deep pink variety, Damio, now almost lost to cultivation, as particularly shy in producing cuttings of any kind. Very fair plants may also be obtained from leaf-cuttings inserted with an eye, this being often the only means of propagating a sport. Last season some of my best flowers of Niveus were obtained from leaf-cuttings. It is better, whenever this is practicable, to take stock from plants which have been grown "cool." Many noted cultivators are following this plan, and grow their stock-plants out-of-doors until late in the autumn, when they are stored in cold frames until required. The reason that so many new varieties do poorly during the first season is that they have been forced and propagated to exhaustion.

We use a general propagating-bed where the bottom-heat is steady at sixty-five degrees, with a minimum air temperature of fifty degrees. This ensures quick rooting and gives us the space for other stock. Cuttings will root with a temperature as low as forty degrees, or even less, and in England it is customary in many places to put them in pots in cold-frames. By this plan, it is claimed, their constitution is strengthened, but I do not think it makes so much difference, especially in a plant which responds to good culture so quickly as the Chrysanthemum. Cuttings should be prepared with a good sharp knife, and shorn of a few leaves and the tips, which are liable to hang about the base of the cutting and encourage damping. They should be put in firmly, and set far enough apart so as not to touch, for when damping once commences it is almost impossible to prevent its spread throughout the whole bed. A liberal supply of water should be given for the first few days, and the plants shaded when the sun shines, for they must at no time be allowed to wilt. The cuttings should be rooted in three weeks, when they may be potted off into small pots, using a rather light soil, not made very firm.

A list of well-tested standard varieties which make good specimens includes:

WHITE.—Ivory, Joseph H. White, L. Canning, Miss Kate Brown, White Gem, Mrs. W. G. Newitt, Parthenia, Mrs. Robert Craig.

YELLOW.—L. C. Madiera, W. H. Lincoln, President Hyde, Mrs. Walter Baker, Mrs. Hicks Arnold, Mr. H. Cannell, H. L. Lunderbruch, Glorian, Fascination.

RED.—C. Shrimpton, Cullingfordii, G. W. Childs, Gladiator, C. B. Whitnall.

PINK.—Duchess of Connaught, Irma, Mrs. M. W. Redfield, Mrs. Fottler, Etoile de Lyon, Louis Boehmer.

Wellesley, Mass.

T. D. Hatfield.

Poinsettias.

WHEN the Chrysanthemum season is over there is usually a scarcity of flowering plants to brighten the conservatory or greenhouse, and nothing, in my estimation, forms a more striking display than a well-grown collection of Poinsettias. Plants, from which the bracts have faded or been cut off, should now be kept dry and rested for a few weeks in a house where a night temperature of forty-five to fifty degrees is maintained. About March 10th they may be removed to a warmer house, kept watered and freely syringed. By the end of the month a plentiful crop of cuttings will have appeared, which may be rubbed off at a heel and inserted in a sand-bed with a bottom-heat of seventy-five degrees. The cuttings must be shaded from sunshine and carefully watered until rooted, which should be in about four weeks after insertion. It should never be forgotten that any carelessness in overwatering may cause the entire batch to damp off.

When taken from the propagating-bed the young plants can be placed in two-inch pots in a compost of leaf-soil and loam in equal parts, with a dash of sharp sand added. They should be grown along in a house where they can have a night tem-

perature of sixty degrees, and must be shaded from hot sunshine and grown well up to the light to keep them stocky. Syringing twice a day is highly beneficial. About the end of May the pots will be well filled with roots, and a shift may be given to four-inch pots. A little well-dried cow-manure may be added to the compost at this stage of their growth. From the middle to the end of June the plants can be moved into a frame and the pots half-plunged in ashes. By the middle of July the plants will be ready for their next shift into six-inch pots. At this potting we use a compost consisting of two parts loam, one part dried cow-manure, one part leaf-mold and a mixture of sand and powdered charcoal to keep the soil porous. After this shift the plants are replaced in the frame and kept freely ventilated, the sashes being tilted up, both back and front, by night and day. A syringing in the evening of a warm day is helpful. After remaining in the frame, perhaps, ten days, we plunge the plants in a bed of ashes in the open air, where we grow our Chrysanthemums. When the pots begin to fill with roots, liquid-manure is applied twice a week. Any liquid which suits the Chrysanthemums may be applied to the Poinsettias.

During the month of August it is well to stake up the plants securely, as high winds are apt to break them off at the bottom. When the cool nights of September come, the plants should again be placed in a frame, for a low temperature will cause loss of foliage quite as surely as overwatering will. About September 20th we place our plants in a house where a night temperature of sixty degrees is kept. If extra fine bracts are desired, it is well at this time to shift the plants into eight-inch pots. They must be kept close to the light and not crowded. When the bracts begin to appear, liquid-manure may be given freely, for Poinsettias are gross feeders. The plants should never be allowed to become either dry or waterlogged, as the foliage will suffer in either case, and no plant looks worse with poor foliage than a Poinsettia. Many of the Poinsettias seen on private places are little better than long unsightly sticks with a few leaves on the top below the bract. As much skill and attention are required to grow Poinsettias with good foliage as to grow Orchids well.

In early December, when the bracts are well developed, the plants can be removed to a house ten degrees cooler. Among Callas, Eupatoriums and similar plants, Poinsettias make a beautiful display, and last in good condition longer than any other flower I know. At this time, February 14th, we have bracts in good condition which were fully expanded in the middle of December, and these measure from sixteen to twenty-two inches in diameter.

Of the several varieties of Poinsettias, *P. pulcherima* is the best for all purposes; *P. plenissima*, the so-called double scarlet species, is useful, and *P. pulcherima alba*, while not pure white, is desirable for variety. After the plants are dried off and have started into growth they will attain an extra size if they are shifted into larger pots. Several bracts will thus be produced on each plant, but neither in size nor in appearance are these as desirable as those grown on younger plants.

Taunton, Mass.

W. N. Craig.

Chinese Orchids.

GROWERS of Orchids for cut flowers may be interested in a few Chinese species that are easy of cultivation and well suited for decorative purposes. The Chinese florists are peculiarly conservative in the matter of stock, and it is unusual to find more than fifty genera represented in their gardens. Novelties are scouted as new-fangled innovations. It is only the well-tried plants that have been hallowed by the appreciation of their forefathers, and endeared by association, that are thought worthy of careful cultivation. And yet there are thousands of native plants in the "Flowery Land" that rival and excel the cultivated kinds; but, as the ancient philosophers who established the canons of taste in China did not proclaim their beauty in some poem, they remain unappreciated. I have often been amused, while botanizing in China, to notice the look of tolerant compassion, and sometimes incredulous suspicion, with which the villagers regarded me when it was explained to them that I was collecting wild plants. They generally looked upon me as a harmless kind of maniac, or else a prospector in search of gold or silver trying to cloak nefarious designs under a silly pretext.

The Chinese botanists have a crude plan of classifying plants, but nothing approaching the Linnean or natural mode of classification in systematic analogy. Terrestrial Orchids are called *Lan-fa*—a general term for gynandrous plants and those with a single flower on a peduncle. The epiphytal kinds are known as *Tiau-lan-fa*, and the term is applied rather indiscriminately

to other epiphytal and parasitical plants. The written Chinese character tiau literally means suspended, and lan, in this connection, denotes few or rare, but has other meanings. Fa means a flower.

I have never seen terrestrial Orchids grown so well as they do them in Canton, particularly *Phajus grandifolius* and *Arundina Chinensis*. *Phajus grandifolius* is generally grown in clumps, massed in twelve-inch pots, and they produce more than a dozen strong spikes of flowers from three to four feet high. The soil used is the rich manurial mud from the banks of the Canton River; this is dried in the sun and afterward broken up into disks about an inch square, and simply thrown into the pot without crocks or any kind of drainage. The disks retain their knobby form and allow the air and water to percolate freely through the mass. Pigs' hair is often mixed with this compost, and weak manure-water is given in the growing season. No water is given in the resting season.

The annual rainfall in that district is seventy-five inches. Little or no rain falls during the months of November, December and January, and the Chinese are careful to give their Orchids complete rest during these months. *Arundina Chinensis* is treated in the same way, and I have grown large beds of this Orchid in Hong Kong, for cut flowers, in ordinary garden soil, the supply of flowers continuing for several months. I am disposed to think that most of these semi-hardy Chinese Orchids could be grown by florists on ordinary Rose-benches, and I am rather surprised to hear that *Phajus grandifolius* has not already become an American cut-flower specialty like the *Chrysanthemum* and *Lilium longiflorum*, both of which come from the same geographical district. These Orchids grow side by side with *Lilium longiflorum* and *Chrysanthemum Indicum*, and in comparison are more floriferous and vigorous than either of the other plants.

Renanthera coccinea is perhaps the most striking of Chinese epiphytes, but importers complain that it is a shy bloomer. This is, no doubt, the case where it has not been sufficiently rested and ripened with sunlight in the proper season. Even in China, where it is often seen flourishing on trees surrounding temples and monasteries, the plants grow rampantly, but are always green and succulent if the groves are too dense. If grown on semi-deciduous trees or pollard-stumps, or ordinary blocks exposed to the sun, it will, however, flower luxuriantly. Its brilliant reddish-brown panicles measure from two to three feet in diameter and dangle around the tree from top to bottom a blaze of cardinal bloom. After the first dry season the leaves of the young shoots turn a yellowish-green if they are well exposed to the light; this is the sign of well-ripened wood, and they usually flower well. If Orchid growers would keep the syringe away from their plants as much as possible during the resting season and hang them horizontally well up near the glass, I think they would be more successful with this magnificent Orchid. *Dendrobium aggregatum* is a plant that likes similar treatment, but is not by any means so fastidious. Plants of this species grow well on splits or trunks of Mango-wood (*Mangifera Indica*), Neem (*Melia Azedarach*) and Silk cotton-wood (*Bombax Malabarica*).

Other good Chinese terrestrial Orchids that can be grown in the same way as the *Phajus* are *Cyrtopera flava*, *Habenaria Susannæ*, *Spathoglottis Fortunei* and *Bletia hyacinthina*.

Manchester, Mass.

A. B. Westland.

Annual Flowers from Seed.—II.

BEGONIA VERNON, while not botanically an annual, is practically one for garden purposes. This is one of the most useful of the newer plants, and, fortunately, is readily propagated by seeds, which it bears very abundantly, as well as by cuttings. The plant forms numerous stout stems which bear clear crimson flowers very freely and persistently. In fact, it is a variety of the old ever-blooming or *semperflorens* species. This is one of the few Begonias which will bear full exposure to the sun during the summer, and the sun has the curious effect of giving the leaves a reddish purple tint. This tint also appears on the peduncles and on the seed-pods as they mature. Either for bedding or for cutting, this variety is most useful and attractive. There is also a golden-leaved variety with pink flowers. From a packet of seed one will secure forms of this Begonia with flowers of different shades of red. In the greenhouse, Begonias of the *semperflorens* type are apt to spring up everywhere from self-sown seeds, and under glass their cultivation offers no difficulties. A pan of fine earth is well watered, and the dust-like seeds are scattered over it as thinly as possible. The pan should be covered and kept at a temperature of seventy degrees for a week, after which the seeds may be expected to germinate at any time,

and after this the pan should be more carefully covered, and it should at no time be too wet. If the pan is covered with a glass this should be reversed every day, and after the germination of the seeds it should be removed entirely. If a re-watering of the seed-pan is necessary before the seeds have germinated, or when the plants are small, the pan should be dipped in water, not so deeply that it will flow over the rim, but deep enough to allow it to flow in through the drainage-holes. A pan of fine seed or small plants should never be sprinkled or watered from above. The failure to germinate tender seeds is often caused by an excess of water, and this excess will be especially fatal if from some cause the temperature of the seed-pan should fall below the point at which the seed germinates. Where there are no greenhouse facilities, these Begonia-seeds and others of similar character can be readily germinated in a warm living-room, but in this case one had better use a deep pot which is telescoped within a larger one, with a packing of moss between. The outer pot is to be plugged, and water may be applied through the moss. The advantage of this contrivance is that it not only holds moisture, but it is not so quickly influenced by changes of temperature as is a shallow pan. The plants may be allowed to grow in the seed-pan, well-exposed to the light and air, till they are of a convenient size to transplant. Shifted into light, open, moderately rich earth, they will progress rapidly, come soon into flower, and if they are sown early in March will be in fit condition for the borders in June.

Calliopsis (Bright Eyes) are among the handsomest of our native flowers, and few annuals are more appreciated in gardens. Their dark brown eyes give them a greater individuality and effect than the hardy perennial *Coreopsis*, which is also much grown. The forms showing markings and suffusions of dark velvety maroon are also specially desirable. Seeds of *Calliopsis* are preferably sown in the open in late summer or early fall, where they make low mats of foliage, perfectly hardy, and from these strong flowering stems arise in early spring. If this planting has been neglected, satisfactory, but not so strong, plants may be had from plantings made in April or May with other annuals. The seeds germinate readily and require no special treatment. Plants are not averse to removal in a young stage.

Calendulas (Pot Marigolds) are showy annuals of the hardiest and freest flowering character. The double kinds with orange or yellow, or both in combination, seem to be most valued, but the single ones are the more graceful. They are very serviceable flowers in every way, and among the easiest plants to grow from seed. Self-sown seedlings are very apt to appear in gardens where the flowers have been allowed to mature. Seed may be sown with the main crop of annuals, as before advised, and require no special attention.

Carnations were placed on the list of annuals only a few years ago, and they have proved quite the most important and valuable of recent additions to the garden, for, owing to the growing of perennial Carnations for cultivation under glass and for winter-flowering, we were without a race of satisfactory summer-flowering Carnations, though specially treated plants were used for that purpose. The *Marguerite* Carnations possess most of the good qualities of the florists' Carnations and flower from seed in about four months. They have single-colored flowers of the Carnation shades, and all, except a small percentage, may be expected to prove fully double. They are free-flowering, of the remontant type, that is, they flower in a succession of crops rather than continuously. They are probably perennial in duration, though they are usually only grown for summer flowers. The seed may be sown indoors, or with the main supply of annuals, care only being required that they may not be overwatered. The plants are readily shifted and grow rapidly in good rich loam. Like all Carnations, water should be applied to the roots rather than to the foliage.

Clianthus Dampieri, the Glory Pea, is an annual which bears very unique and handsome flowers when it can be induced to grow, but it has not been a plant which could be recommended for general cultivation. I mention it, however, from the fact that a new strain has been lately offered (by Dreer), in which the plants are said to be more hardy, as the result of careful selection in a cold climate. My experiment with this strain last year leads me to believe this claim well grounded, for, though the seedlings were started late and did not flower, I have never before had such promising, vigorous plants of this species. The seed should be sown early; March would probably be the right time. They germinate best in wet woolen cloths, and should be planted after the germ shows. Any one who has struggled with this plant grown from the Australian seed, as usually supplied, knows that it has been one of the most uncertain ones in the florist's list.

Cosmos has lately become a most popular annual, and of recent years it has also become a favorite flower with the florist. It certainly is a most beautiful plant, with the very finely cut foliage, over which airily poise the handsome single flowers. The white variety is the most effective, the so-called pink being inclined to a dull purple. Henderson offers a strain, the flowers of which are twice the size of the ordinary variety, but the greatest improvement in the Cosmos would be a reduction in the height of the plants, which often reach six or seven feet. Plants of, say, three feet, of the same character would be grand additions to our autumn gardens and conservatories, and could be easily protected from the frosts which are usually due with their flowers. Cosmos seems to be a plant of a special season—October—and it apparently is of little importance to sow the seed earlier than with the main crop of annuals.

Elizabeth, N. J.

J. N. Gerard.

Border Flowers in February.

SUNDAY, February 11th, was a day of bright sunshine, with a genial temperature, and the little colony of winter flowers under my windows spread their petals and fairly smiled with their reawakening. Stray flowers have been gradually unfolding for several weeks as the rigor of the days relented, but it was not until then that the more close plantings were effective. Rarely beautiful in this winter weather were the bright rosy flowers of *Crocus Imperati*, with the strong purple and clear blue of *Iris Persica* and *I. Histrio*, all fully expanded, and with every color made more vivid by the pure white of the *Snowdrops* (*Elwes* and its varieties), which were blooming all about them. *Iris Histrio* is the earliest of the *Reticulata* Irises, and has a fair claim to the distinction of being the handsomest of the section. It is nearly blue, and the falls are lined and spotted with exquisite markings. This *Iris* is also rather more delicate, apparently, than the other members of the same group, and it is doubtful if it will survive many seasons, unless in a very warm border. The foliage appears before the flowers, and I notice that it is more affected by hard weather than the others, which may militate against the ripening of the bulbs. *Iris Persica*, var. *purpurea*, which is one of Max Leichtlin's introductions, opened a few days before *I. Histrio*. This variety is a decidedly pretty little flower, blossoming low like the type, but very dark reddish-purple in color, with an orange ridge, and white marking on the fall. Both of these Irises were ready to expand a week earlier, but the temperature at the time dropped to four degrees, Fahrenheit, and their appearance was delayed. I have observed that when the flowers named are sheltered from the winds they will endure the lowest temperature we have here and remain uninjured. Over the Irises I fasten frames of glass held in wire frames, but open at the sides, to protect them from snow and storms. The garden is now hidden under the snow, but these flowers will again appear, when more genial conditions favor us, as bright as ever and quite uninjured by their temporary eclipse.

Elizabeth, N. J.

J. N. G.

Correspondence.

The Beauty of Orchids.

To the Editor of GARDEN AND FOREST:

Sir,—In an interesting article on "Orchids," published in the February number of *Scribner's Magazine*, Mr. W. A. Stiles says: "They have such a high-bred air that no one thinks of questioning their rank as the true aristocracy among flowers. They are so distinct from the mass of garden-flowers that they seem to belong to a nobler race. They possess refinement of form, grace of bearing, delicacy of texture, purity of color, and many of them delicious fragrance—every attribute, indeed, which in a flower compels admiration." Similarly an English amateur wrote not long ago: "Fancy has not conceived such loveliness, complete all round, as theirs—form, color, grace, distribution, detail and broad effect."

These words certainly echo the feeling of countless horticulturists and flower-lovers, and I am ready to believe with Mr. Stiles that "the cultivation of Orchids would flourish without the adventitious attraction" which is given by their exotic origin and, often, by their consequent rarity and costliness. Nevertheless, this adventitious attraction has, of course, increased their vogue. All Orchids do not deserve the praise which Mr. Stiles gives them as a whole, and some of those which have the least intrinsic charm are among the most popular. The *Lycastes*, for instance, have thick, fleshy, clumsy petals,

which certainly cannot be called delicate; and sometimes they are muddy and impure in tint.

But I want especially to note that while very many persons would heartily endorse Mr. Stiles' general estimate of the attractiveness of the Orchid race, there are others who boldly question its right to be called nobler, more aristocratic, or in any way more delightful, than other floral races. Showy, peculiar, and therefore, as I may say, very aggressive in their claims upon the eye, Orchids seem to have an especial faculty of exciting not only particularly strong likings, but, on the other hand, particularly strong dislikings. If one chances to care about them, nothing else is admitted into comparison with them; but if not, it seems possible actually to hate them. I have a friend who always humorously insists that their name must be a corruption of "Awkwards"; and another, an artist, who confesses, "I used not to like them, but my taste has gradually become perverted"; and a third, who declares, on the contrary, that at first they interested her, but now "they have become intolerable."

In some cases the feeling against them is doubtless due to the mere fact of their extreme popularity; some people are naturally prompted to dislike anything which is generally praised, especially if its popularity leads at times to the undervaluation of other commendable things. Again, there are persons who are instinctively repelled by eccentricity, peculiarity, or even novelty; persons of conservative taste, who delight in the familiar, the normal, even the commonplace, and cling to old things because they have always loved them, and turn away from new things, because to admire them would mean a fresh attitude of mind.

But a third and better reason may be found for the distaste sometimes shown toward Orchids. What many people call their love for plants is simply a love for flowers. But there are others with whom it means a love for the whole organism as seen individually, and, still more, as seen in the varied yet harmonious environment of natural conditions. These people take more delight in the aspect of a flowery meadow than in gathering bunches of Daisies, Buttercups and Clover; they would rather stoop for a moment over a rare wild flower, growing at the foot of a forest-tree, than pick it to carry home, preferring to remember the picture it made swinging amid Ferns and Mosses, and flickering lights and shadows, rather than to see the picture it makes when put in a vase on the mantel-piece. And it is among such people, I think, that one often hears expressed a dislike toward Orchids, or, at least, an indifference to their charms. Of course, we are now speaking of the Orchids grown in our hot-houses, which are of foreign origin and usually of epiphytall character. The people I have in mind do not deny the beauty of their flowers, or claim that it is less than the beauty of those borne by our native Orchids, which they admire so truly—the fragile sweet-scented pale-pink *Pogonia*, growing by the roadside in a sunny ditch; the white-fringed *Habenaria*, springing in snowy clumps from a tangled corner of a swamp, or its lilac-fringed cousin overtopping the grasses of a riverside field; the *Calopogon* flushing patches of pasture to a soft purplish tone, the rosy *Cypripedium* nodding in some dusky recess at the base of a Pine near the edge of a woodland road, or the splendid parti-colored *Calypso* gleaming from a boggy corner of the forest's very heart. Nothing, they confess, could be more gorgeous than the flowers of some exotic Orchids, more dazzlingly beautiful than others, more curiously interesting, or more delicately dainty and fairy-like, than others again. But, nevertheless, the aspect of a basket of these Orchids, or of a hot-house shelf filled with them, gives them little pleasure. The flowers are beautiful, they say, but the plants are not.

Rarely, in truth, is an Orchid-plant, grown in our hot-houses, a beautiful object as a whole. Sometimes the foliage is attractive, but often it is not; and when it is, its effect may be injured by the aspect of the naked, oddly-shaped pseudo-bulbs which bear it. Frequently the rich masses or streamers of blossoms develop from long bare gray stalks; and sometimes such stalks are queerly attached to the body of the plant. Among the *Vandas*, for instance, we find a tall column of stiffly opposed leaves, bearing, in the most accidental-seeming manner, a long, twisted, dead-looking flower-stalk, the great panicle of whose flowers seems over-heavy for the plant, as well as devoid of any organic relationship with it. "The flowers are beautiful, yes," said one of the friends of whom I have already spoken, with regard to a *Vanda*; "but how can I admire them on such a stalk, especially as it looks as though it has been fastened to the plant with a pin?" To people who feel in this way, cut Orchids, gracefully arranged in a vase, are more satisfactory than growing Orchids, however much they

may prefer to see blossoms of other kinds in their natural environment.

I need hardly explain, however, that they feel thus toward Orchids because they are not grown in their natural environment. Monsieur De Longpré's pictures, in the article in *Scribner's Magazine*, to which I referred at the outset, may, perhaps, give some people, unacquainted with Orchid-houses, ideas of beauty which will not be entirely fulfilled by a sight of his originals; for, while these were hot-house specimens, the grace of his imagination and his pencil has supplied them an atmosphere which suggests their appearance in their natural habitats. Could we see our Orchid-plants in this habitat, the most accustomed eye would confess that it had never really seen them before. There, their ugly features are masked from view by luxuriant surrounding growths, or are so far removed from the eye as to be inconspicuous, or, if seen, they fit so well with the general character of the local vegetation that they no longer seem ugly. Only the blossoms themselves attract attention, mysteriously emerging from splendid tangles of tropical foliage, or appearing to spring, not from thickened bases of their own so much as from excrescences of the tree that supports them, or seeming to float in the air like swarms of gorgeous butterflies—their own splendor clearly perceived, the grayish leafless flower-stalks invisible at that distance. Seen thus, they must delight, not only the person who loves flowers, but, in equal degree, the person who loves plants, and him who especially loves those beautiful general effects which untutored, undisturbed Nature produces with her plants and flowers.

But there is still another class of persons in whom Orchids arouse no great enthusiasm. And these object, not to the unfortunate effect of plants dis severed from the surroundings which Nature gave them, but to the character of their flowers as such. They will tell you that all Orchids are interesting because of their individuality, but that even some of the showiest are not beautiful, and that the most beautiful are those which are least eccentric, least irregular. And this illustrates a fundamental diversity among human beings as regards their æsthetic leanings.

It has been said that, as some men are born Platonists and some Aristotelians, so some are born classicists in art and some Gothicists; and this means that some of us are specially appealed to by symmetry, harmony, balance and repose, and others by variety, irregularity, vivacity and piquancy. The quarrel over the beauty of Orchid-flowers is, in truth, but the old quarrel between the classicist and the romanticist showing itself in a novel way, or the modern quarrel over the pre-eminence of Japanese art-ideals showing itself in the realm of Nature. To all of us Japanese art is interesting, charming, significant and delightful in its own way; but while to some it has a charm equaled by no other artistic developments, to others it speaks with an alien tongue, and seems immeasurably inferior to the art of the occidental world when studied in its best developments. The difference has, however, really nothing to do with quality—it is a difference as regards fundamental ideals. The ideal of Japanese art is a perpetual asymmetry, a perpetual variety, a perpetual changefulness and pliancy, and, I may say, liquidity. It is, above all, an art of motion, and, therefore, of suggestion. And as such it is so diametrically opposed to Greek art that one can hardly understand how the same mind can feel entire satisfaction even in the best products of both developments. Of course, no real comparison between works and works is possible; but this is the very point: when underlying motives and ideals are so alien that their products cannot be compared, it seems as though all men must, by birth, be ranged upon the one side or the other, having admiration to give to the opposite side, but not that innate full appreciation, that feeling of entire contentment as in personal ideals fully realized by other minds, which they give to their own side. Your true-born classicist is never stirred even by the most wonderful products of Japanese art as he is stirred by fragments of the art of Greece, based upon ideals of symmetry, order, repetition, reposefulness and definite realization.

Now, it may seem fantastic to transfer these facts into the domain presided over by the naive Goddess Flora. But a man's æsthetic bent, if he really has any, and not merely a mass of acquired or imitative tastes, shows itself with regard to everything he sees, from statues to bonnets, from pediments to flowers. If he is a born romanticist, he will probably have a genuine passion for Orchids; if he is a born classicist, he will admire them in a measure, of course, but he will not have a genuine passion for them; he will not call them the aristocrats and queens among flowers; and, if he is very intense in his classicism, he may easily find their beauty

of an unsatisfying, disturbing, discomforting sort. The Narcissus, he will tell you, is his ideal of perfect beauty. Or, if it seems too coldly pure, too sculpturesquely formal, he will point you to the Lily or the Water-lily, or, with especial emphasis, to the Iris. Here is variety enough in both form and color, surely, but existing with perfect symmetry, balance and repose of effect, and, therefore, with more dignity, more true aristocracy of air, than one can find in any Orchid. And, again, in a different direction, he will point out the Pansy. The general type of form in the Pansy is that of many Orchids; but it surpasses them just in so far as this type is expressed with less boldness of accentuation, in a more reserved and balanced—and therefore more classic—way.

So there is nothing absolute in the matter. You cannot say, this is best, this is most beautiful; you can only say, I like this best, I find this most beautiful. And, according to your preference in this matter of flowers, you may decide whether you are a born classicist or a born romanticist. For myself, I may confess that I admire Orchids immensely, but that there is more true beauty, to my eyes, in an Iris-flower, even in one of those little ones which blue our native meadows in June, than in any Orchid I have ever seen. And if earthly flowers live again in heaven, I can think of its glades as sprinkled with Narcissi and Lilies and Pansies much more easily than as canopied with streamers of Orchids. You may feel differently, for you were born with one sort of æsthetic taste, and I with another. It is a matter of fate, not of caprice, whether one loves Orchids or does not.

New York, N. Y.

M. G. Van Rensselaer.

[When the Chrysanthemum is called the Queen of Autumn, or the Birch is spoken of as the Lady of the Woods, no one interprets this language as any reflection upon other flowers or trees. When Orchids are styled aristocratic, high-bred or noble, such expressions call attention to a certain air of distinction which these plants wear, and do not imply that they are superior, in all respects, to other plants. One may admire a high-bred lady without being insensible to the charms of a rustic beauty. Facts do not bear out the statement that "when one cares about Orchids nothing else is admitted into comparison with them." Many persons have a genuine admiration for Orchids, and have at the same time a thorough appreciation of the loveliness of way-side wild flowers. It may be true that there are persons "who actually hate Orchids," or think they do, because they see them amid unnatural surroundings; but, to be strictly logical, such persons ought not to admire any plants grown under glass or other artificial conditions.

The theory that one whose inborn taste inclines him to the forms of classic art will admire Daffodils and Pansies, and will find no satisfaction in Orchids, seems too finely drawn and fanciful to have any substantial value.—Ed.]

Recent Publications.

Greenhouse Construction. By L. R. Taft. New York: Orange Judd Co.

Four or five years ago Professor Taft built two forcing-houses for the Michigan Experiment Station, principally to test the relative merits of steam and hot-water for heating purposes, but also to compare the different methods of construction, of glazing and of ventilation. The bulletin which reported the results of the heating tests was widely copied, and brought so many letters of inquiry from all parts of the country asking for advice on various points in the design and construction of greenhouses, that no further proof was needed of the wide-spread desire for information on these subjects. It is to supply such information that this little book was written. Professor Taft's personal experience, in addition to his careful study of the subject in the leading private and commercial establishments where glass-houses are used throughout the country, has enabled him to prepare a manual which is admirable in its compactness and completeness. In its twenty chapters, two hundred pages and one hundred and eighteen illustrations, every amateur or commercial plant-grower who uses a greenhouse or hot-bed, cold-frame or plant-pit can find something that will broaden his knowledge or freshen up

what he already knows, or stimulate him to some sharp thinking about the materials for building, the arrangement of his houses, with their shading, heating, ventilation and general furnishing.

Notes.

Leaves of the Talipot Palm in Ceylon sometimes attain the length of twenty feet, with a width of eighteen feet. They are used by the natives in making tents. The leaves of the double Coconut Palm are often thirty feet long, while those of the Inga Palm on the banks of the rivers of Brazil are sometimes fifty feet long and ten to twelve feet wide.

A correspondent of the *Country Gentleman* makes note of the fact that he found the Skunk Cabbage in bloom on the 26th of January at Redding, Connecticut. This is always one of our early flowers, but we have never seen one in this latitude open in January. It is really a handsome flower and it never emits the odor which justifies its common name unless it is bruised.

The Spinach mildew, which has of late been a serious trouble in the truck-fields in this vicinity, can only be controlled by the use of some compound of copper which will prevent the germination of the specific fungus spores on the plants. The Bordeaux mixture could be used once or twice a week, but, inasmuch as it is necessary to spray the under surface of the leaves of the plants, the nozzle of the sprayer should be held close to the ground so as to reach every exposed portion of the plant.

The eighth volume of De Candolle's *Suites au Prodromus Systematis Naturalis Regni Vegetabilis*, which has just reached us, is devoted to the Guttiferæ, and is from the pen of Julien Vesque. The editor, Cassimere De Candolle, of the third generation of the family of illustrious Geneva botanists, calls attention to the fact that the publication of this volume marks a solemn date in the progress of the enterprise, as it is the last upon which his father, the second of the name, was occupied. As the surviving editor of the work, Monsieur Candolle expresses the hope of being able to complete it on the plan under which it was commenced.

The most important work on systematic botany which has recently appeared, Engler & Prantl's account of the natural families, is now nearing completion, the ninety-third part having recently reached us. This work, which seems destined to have an important influence on American botany, as it has been adopted as a model in the arrangement of the natural groups of families and genera for the *New Flora of North America*, which a number of American botanists have arranged to prepare, is published at Leipsic, by Wilhelm Engelmann. The price of subscription is one mark and a half for each part. At the present rate at which the work is appearing there is every evidence that it will be completed during the current year.

Many of our native shrubs can be successfully forced in winter. Of these Mr. Jackson Dawson considers the best: *Andromeda speciosa*, *A. floribunda*, *Rhododendron nudiflorum*, the *Rhodora*, *Epigæa repens*, *Pyrus nigra*, *Kalmia latifolia*, *Ledum latifolium*, *Prunus pumila* and *Vaccinium stamineum*. Some of these, like the *Andromedas*, *Pyrus nigra*, *Kalmia* and *Vaccinium*, would carry well and could be used in the trade to as good advantage as the *Deutzias*, *Lilacs*, *Citrus* and other foreign plants which are now largely raised. These shrubs, grown in a cool-house, would make handsome decorative plants for winter and early spring work, and they would flower more abundantly and often make more perfect specimens than they do when left to themselves out-of-doors.

Last year we gave some account of the efforts to check the spread of the tent-caterpillar in certain parts of Massachusetts by offering prizes to the children for collecting the largest number of belts, as well as a certain sum for each thousand. We have received a circular which is signed by D. D. Slade, President, and L. H. Farlow, Secretary of the Newton Horticultural Society, which has been doing work of this kind. In the winter of 1891-92 it is estimated that 25,000 eggs of caterpillars were destroyed, and during the winter of 1892-93 more than 40,000 were destroyed. The city of Newton also appropriated \$500 to be used under proper supervision for cutting down such trees as formed breeding-places for insect pests. The Newton Horticultural Society proposes to continue this work this year, and offers to pay a bounty of \$1.00 for every thousand belts, while the city has appropriated \$800 for the continuation of its work. The enlistment of children in this crusade against destructive insects is valuable, not only for its immediate effect in checking the ravages of these pests, but it

has a certain educational value by encouraging in children habits of observation and furnishing object-lessons in more than one natural science.

Mr. Albert M. Herr writes to the *American Florist* that some growers of Carnation-flowers for market are raising their plants from seed. Mr. Shelmire, who is an expert in the cultivation of these plants, finds that nearly all seedlings of the variety *Cæsar* have good double salable flowers. Of course, a few of them will produce flowers that are inferior, but seedlings have so much more vigor than cuttings, and are free from rust and other diseases which come from propagating from infested plants, that they prove as profitable, at least, as plants from cuttings of the standard varieties. Other growers are experimenting with the variety *Buttercup*, and it is said that a large percentage of these seedlings come true. Mr. Herr suggests that when a variety shows this persistence of type, it might be possible, at least after a few years' selection, during which all strange pollen is excluded and the flowers on each plant fertilized with the flowers of another of the same variety, so as to prevent self-fecundation, which is supposed to cause weakness of constitution, a strain of seed might be secured which could be trusted to reproduce the parent variety with certainty. Experiments of this sort are worthy of trial, no doubt, since plants from seed have many advantages over those from cuttings.

Professor Troup, in a recent report on some experiments with small fruits, speaks of the necessity of adopting some means to secure an adequate water-supply. Strawberries and other small fruits which ripen early in the summer were almost completely ruined last year by the severe drought, and since these fruits always require a large amount of water during the ripening period to enable them to develop properly, experience has shown that it is not safe to depend on the natural rainfall, not so much because this is insufficient in amount, as because it is not properly distributed. The average monthly rainfall in Indiana during the six growing months would usually be sufficient if it were properly distributed, but while there were 4.13 inches of rainfall at the station during May and June, there was little more than one inch in June, and all this fell in four days, leaving twenty-six days without any rainfall. An inch of water during the dry periods would have been worth thousands of dollars in every location where fruit is grown. Near Muncie, Indiana, Mr. Lewis Cowing, when he found his crop threatened by drought, bought an engine which could be propelled by natural gas, and placed it in a well so that he could raise the water over a large portion of his berry-garden. His well seemed almost inexhaustible and he had a good crop of perfect berries. The gas-engine and pipe cost him \$90, but he saved a crop worth more than \$300. On a few rows not watered the fruit was worthless. After the Blackberry season was over he turned the water on his Celery with most profitable results.

The *Orchid Review* for February contains the first of a series of articles on the "History of the Cultivation of Orchids," and they promise to be as interesting as the series on the "Hybridization of Orchids," which ran through the numbers of the same monthly last year. This opening chapter shows that Orchid-culture, as we know it, did not exist until the beginning of this century, although some very interesting details are given of the introduction of tropical Orchids in the first half of the eighteenth century. *Bletia verecunda* was the first tropical Orchid ever cultivated in England. The plant was sent as a dried specimen to Peter Collinson in 1731 from the Bahamas, and Collinson, not despairing of life in the tubers, sent them to the garden of a Mr. Wager, where they were placed in a tan-bark bed during the winter, and, having recovered health, produced flowers the next summer. Two of our North American Cyripediums, *C. spectabile* and another one, which may have been *C. pubescens*, were cultivated, perhaps, as early as 1737. At the end of the century there were cultivated in English gardens, besides several hardy species, Orchids which had been brought home by travelers, naval officers and military officers from the West Indies, China and the Cape of Good Hope, although when these managed to survive the long trip in sailing vessels, they were in too many cases killed on their arrival by improper treatment. Our beautiful little *Calopogon pulchellus* was introduced accidentally in some bog-earth which had been taken over to England with some plants of *Dionæa* for the botanist Curtis. His gardener noticed some small tooth-like, knobby roots in the soil, and having placed them in pots of the same earth and plunged them in a tan-pit with gentle heat they produced plants the following summer which flowered, and from the strongest of these plants the first Orchid was figured in 1790 in the *Botanical Magazine*, vol. iii., t. 116.

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Electricity and Plant-growing.

FIFTY years ago experiments were made in Scotland to test the influence of electric currents upon the growth of plants, and since that time, both in Europe and America, many attempts have been made to ascertain whether the electrical condition of the soil or of the air had any influence upon vegetation, and how this influence, if it existed, could be applied to practical advantage. We have published at various times, within two or three years past, reports of trials in which electric light had also been used for the purpose of stimulating plant-growth. The latest summary of the results obtained in both these directions was given at the last monthly meeting of the Massachusetts Horticultural Society by Professor Bailey, and the subject seems worth the attention of every one interested in horticultural science. It should be added to what Professor Bailey has stated that something like ten years ago agricultural chemists were trying to ascertain whether plants received any of their nitrogen directly from the air. It was argued then that, under certain electrical conditions, free nitrogen in some way combined with other substances, and that the resulting compounds, dissolved by the soil-water, were taken up by the feeding roots of vegetables. This theory has not been disproved, but since it has become the accepted doctrine that there are living organisms which attach themselves to the roots of plants, especially to the roots of leguminous plants, and are able to secure a certain quantity of nitrogen from the air for the use of such plants, little investigation has been made to ascertain any possible connection between electrical influence and the nitrogen supply of plants. Professor Bailey's remarks were confined to the two subjects of illumination and direct currents.

In the first place, there seems to be no doubt that artificial light has the same kind of influence upon plants that sunlight has, and that the influence is greater as the light approaches the energy of solar light. Electric light is used because it is the most powerful artificial light and because it is similar to sunlight in quality, although rather richer in the ultra violet rays, and, perhaps, rather weaker in the orange rays. The use of an orange globe to make an electric light resemble sunlight more closely seems to give more rapidity of growth than when the light passes

through glass of other colors. But this difference is so slight as to be hardly appreciable. What seems to be demonstrated is, that electric light from a naked arc has some injurious influence on plants growing within certain distances, while they receive benefit when removed farther away. Plants vary much as to their susceptibility to the influence of this light. Under it Endive, Spinach, Cress and Peas planted at Cornell University showed various results, while Carrots were almost invariably injured. Lettuce, on the contrary, was greatly benefited, particularly when the light was burned only the first half of the night. This result was confirmed by repeated tests, so that it can be asserted that a 2,000-candle-power lamp, when it is run half the night or less, has a marked influence for good upon Lettuce in a house sixty feet square.

The influence of naked light upon the productiveness of flowers and upon their color varied in the tests made with different species and with different colored flowers of the same species. Several varieties of Tulips showed deeper and richer colors when developed under the light, but these colors lost their intensity in four or five days, and were afterward not distinguishable from the colors of those which were growing in unlighted houses. Under the light, too, the plants had longer stems and larger leaves, and a greater number of them were floriferous. Petunias grew much taller and more slender when close under the light than when twenty or thirty feet from the lamp, and they bloomed earlier and more freely. White Petunias were not changed in color by the light, but purple ones, especially those nearest the lamp, quickly became blue. Other flowers behaved differently, each according to its kind, but all flowers, of whatever species, which stood within five or six feet of the naked arc were injured; they were of short duration, while those which were twelve feet or more away did not show any effect of this kind. What was generally apparent was that the light hastened blooming, and flowering plants grown in the light of an unscreened arc produced longer stems. These good effects were counterbalanced by some injuries, but it was subsequently found that the use of a globe or a pane of glass would avert some of those injuries to flowers as well as to foliage, while some increase in earliness and strength was obtained. Nevertheless, it must be said that we are not yet sufficiently acquainted with the possible influence of electric light to advise its adoption where flowers are grown.

Since it seemed probable that the noxious effects of this light could be overcome by the interposition of glass, the arc surrounded by a globe was hung six feet above the middle of a glass roof, and arrangements were made so that half the house had no light while the other half received it. This comparative test showed that Lettuce was greatly improved in the light apartment; Endive, which had been injured in other experiments, showed no bad results, but no improvement, while Radishes, which had been seriously injured before, showed a decided gain. It is worth observing that when the light was modified by an opal globe the injury was less serious, and that a light strained through a globe and a glass roof gave an increase both to the tops and roots. Similar results were obtained with Beets and Spinach, while Cauliflowers were decidedly the best in a dark house; so that while it is established that electric light can be profitably used in the cultivation of Lettuce, and while it is probable that flowers may be benefited, it is a fact that the different species and genera behave so differently that we need much more experience before we can pronounce definitely on any fact, except the one that the light does exert a powerful influence.

As to the direct effect of electric currents applied to the plants, to the soil in which they grow or to the atmosphere surrounding them, we as yet have no great amount of accurate knowledge. We only know that at Amherst College, in this country, and at several places in Europe, wires have been stretched about fields and gardens and charged with electricity. They have been passed through the soil and similarly charged, and in the case of some

field crops and vegetables a marked increase was obtained, in one instance the crop being more than doubled, while the same treatment injured certain other crops. What we know certainly seems to be that the artificial use of electricity, either in the air or soil, about plants may exert a powerful influence upon them, but the character of this influence varies with the species. This seems to be one more illustration of the fact that plants respond to external forces in accordance with their race-history or the long course of their development and adaptation to different conditions. What we already know is of some practical value. Some market-gardeners are already using the electric light in forcing plants, and they think that it pays. That this powerful agent may be utilized to advantage with increased knowledge, seems not at all improbable. That as yet we know so little is not a fact that should discourage us; enough has been demonstrated to justify further experiments both with the light and with direct electrification.

Notes for Mushroom-eaters.—VI.

PUFF-BALLS AND MORELS.

BESIDES the groups of fungi already mentioned, which include by far the greater part of the edible and poisonous forms, there are the Puff-balls, with which every one is familiar. These fungi could hardly be called toadstools in any sense, for, excepting the related Stink-horns, which have a disgusting odor of carrion, and certain forms known only to the special student, they do not have a stalk and expanded top, but they appear on the surface of the ground in the shape of solid balls, which break open at the top when ripe, showing a powdery mass within. The Puff-balls are, as a rule, quite safe, and have a good flavor, provided they are eaten while the interior is still solid and before the central portion has become powdery. One very common species, *Scleroderma vulgare*, is regarded with suspicion, and on that account we give a figure of the species (see Fig. 17), remarking that our other species may probably be regarded as safe. In the doubtful species figured the outer envelope is yellowish brown and warted, and the interior, even when pretty young and solid, is of a mottled purple-black. The Giant Puff-ball is not unfrequently forty inches in circumference and of a white color when in condition to be eaten. When mature, in which condition it should not be eaten, the interior is a mass of greenish-yellow powder. The Giant Puff-ball is not common with us, unfortunately, though another smaller, but good-sized, species is often abundant, and at times even does injury to lawns, which it disfigures by the fairy-rings which it forms. This species, *Lycoperdon cyathiforme*, has not the flattened oval shape of the Giant Puff-ball, but is usually broader above and narrowed below.

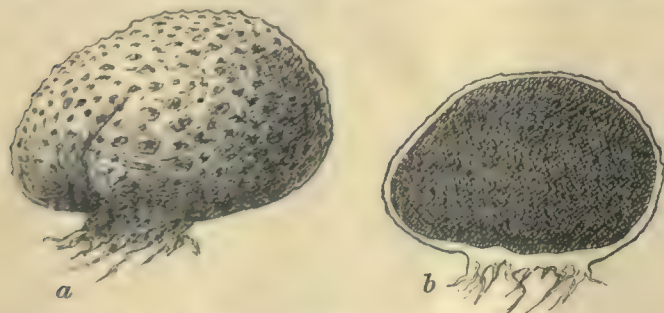


Fig. 17.—a. *Scleroderma vulgare*. b. A section of the same.

Furthermore, at maturity, it is filled with a purple, not a yellow, powder. Besides these two large species we have a considerable number of smaller species often furnished with spines or warts on the surface. The writer has eaten several of them, and there is no record of injury done by eating any of them.

The question is often asked, Have we any Truffles in this country? We have a few members of the Truffle family,

but they are among the botanical rarities, and none of our species are the same as the highly prized species of France and Italy. Our only edible Truffles are to be found at the grocers', and they are all imported in tin cans from France, the price being high and the quality dubious. One not unfrequently receives native specimens which are supposed to be Truffles, but they invariably prove to be something else, and generally some form of Puff-ball. The species

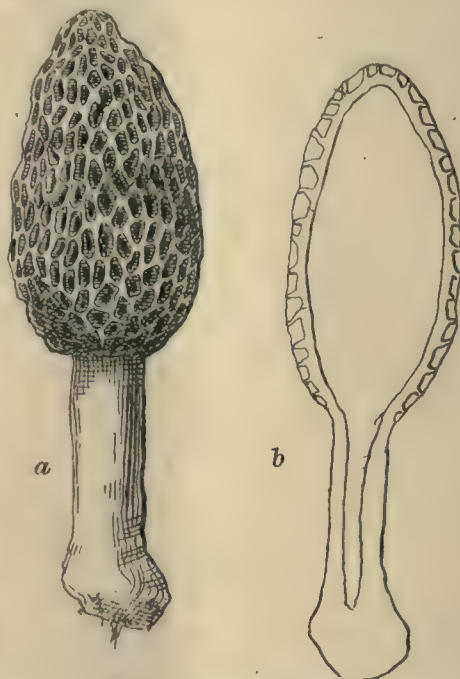


Fig. 18.—*Morchella esculenta*.
a. Morel, slightly reduced. b. A section of the same—edible.

most frequently sent is *Scleroderma Geaster*, which grows partly buried in the soil, and which, according to correspondents, is palatable, although one would not have suspected it.

We can here mention but one more species, the Morel, the best of all fungi, excepting, perhaps, Truffles. Botanically speaking, the Morel is not closely related to the family of the toadstools, but its shape might strike the uninitiated as something like that of a toadstool. Morels are found only in late spring or early summer, much earlier than the mushroom, in grassy places under trees. Fig. 18 shows their general appearance, which is unmistakable. As the section shows, the fungus is a sort of hollow shell, the upper part of which is honeycombed or pitted with cup-shaped depressions, externally. The lower part or stalk is somewhat granular, the color is pale yellow and the substance somewhat waxy. It should be borne in mind, as shown in the figure, that the pitted upper part and the stalk are continuous, for we have a species of doubtful character in which the upper part is more or less wrinkled, not pitted, and not continued directly into the stem. However, after having seen our figure, no one of ordinary powers of observation is likely to confound the two.

From the foregoing we may summarize the following rules for the guidance of the fungus-gatherer; although there are numerous exceptions with which experts are familiar, the novice is forced to adopt arbitrary rules:

1. Avoid collecting fungi in the button stage, since in their unexpanded condition poisonous species may be easily mistaken for edible species.
2. Avoid all fungi which have around the base of the stalk (stipe) a sac like or scaly envelope (volva).
3. Avoid all fungi having a milky juice, unless the milk is reddish.
4. Avoid all fungi in which the cap (pileus) is thin in proportion to the gills, and in which the gills are nearly all of equal length, especially if the pileus is bright-colored.

5. Avoid all tube-bearing fungi in which the flesh changes color when cut or broken, or where the mouths of the tubes are reddish.

6. In the case of other tube-bearing fungi, experiment with great caution.

7. Avoid those fungi which have a sort of spider's web or flocculent ring round the upper part of the stalk.

8. Never eat fungi of any kind in which the flesh has begun to decay, even slightly.

9. Remember that the popular belief that if a fungus has a surface which can easily be peeled off, or that, if while being cooked it does not blacken a silver spoon, it is not poisonous, is absolutely erroneous.

It may be added that steeping in milk or vinegar does not destroy the poisonous properties of fungi, except in certain cases, and even then the milk or vinegar must not be eaten. On the other hand, some species become apparently more dangerous by cooking with milk or vinegar.

Harvard College.

W. G. Farlow.

Exotic Trees and Shrubs for Florida Gardens.—III.

ILLICIUM anisatum, also from China, is an excellent shrub for Florida. Belonging to the order Magnoliaceæ, it is fine in flower and leaf. The blossoms are very beautiful and fragrant, yellowish-white, small and disposed in terminal clusters. The leaves are oblong and have a strong odor of anise-seed when rubbed. In Orlando I saw dense and beautiful specimens near a ditch, and in the famous Drayton Gardens, near Charleston, South Carolina, there are specimens of large size and fine form. If well fertilized and heavily mulched and watered, the Illidium thrives well in the sandy soil of Florida, though it is of rather slow growth. Our indigenous species, *I. floridianum* and *I. parviflorum*, are of equal beauty, but they are difficult to procure, as they are not found among the treasures of Florida nurserymen. I have searched for them quite often in the woods, but have never been able to find them.

Jochroma tubulosa and *J. Tonelli*, natives of tropical America and belonging to the order Salanaceæ, are all strikingly beautiful plants, attaining a height of five to eight feet. They are of rapid growth and dense habit. In the famous garden of Mr. Thomas Hanbury, La Martola, Italy, they thrive to perfection, and my plants were all raised from seed gathered in that garden. The color of the flowers is deep blue, and in order to see them readily they should be planted near the paths and walks of the garden. *J. coccinea* has beautiful red flowers. Although my plants, which were very small when set out in the fall, did not grow, I feel sure that they can be made to thrive in Florida.

Lasiandra macrantha, of Brazil, is an admirable shrub for Florida. I have seen specimens five to eight feet in height at Orlando. The flowers are of the richest violet-purple, about five inches in diameter, and appear at the ends of the branches. This plant, when fully grown, is exceptionally decorative, and it endures a few degrees of frost with impunity. If cut down, it sprouts readily from the root-stock. It likes a moderately rich soil, some fertilizer and heavy mulching. Another species, *L. Benthamiana*, on Mr. E. H. Hart's place at Federal Point, grows to great perfection, forming a dense thicket of woody stems, fully ten feet high. The flowers of this species are dark purple, almost white in the centre, and about two inches in diameter. There are quite a number of other species as beautiful as those mentioned that may prove to do well in Florida. These plants are now known under the name of *Pleroma*.

Magnolia parviflora and several other species of the Chinese deciduous *Magnolias* do not grow in the light sandy soil of Florida. They are likely to thrive if grafted on *Magnolia foetida*, a species that grows well in almost any soil.

Michelia fuscata is generally known in the south At-

lantic and Gulf region under the name of Banana Shrub. It is one of the most attractive of evergreen shrubs, and one specimen, at least, should be in every Florida garden, however small. In Charleston, South Carolina, and in New Orleans, it grows to a height of ten to fifteen feet and as much in diameter. It is graceful in habit, and if left to itself its lower limbs almost rest on the ground, so that its form is almost a perfect globe. Its leaves are dark glossy green and rather large. The flowers are creamy-white, the calyx brown. Although these small blossoms, hidden in the dense foliage, make no show, they are intensely and deliciously fragrant, and the air about them is heavy with their perfume. The plant grows well on high Pine-land, but needs some coaxing. "Many exotic hardwood, evergreen plants," writes Mr. E. H. Hart, of Federal Point, "are best grown in half shade, with prepared soil, until they become large and strong, before placing them in the open ground. If the situation where they are destined to remain permanently be sandy or dry, a judicious mixture of clay and humus, treated with some good fertilizer and dug into the soil just beyond the extremities of the roots, ought to coax the plants into growth. Exposed when small to the vicissitudes of field-culture, they are likely to become stunted or go into decline. Here, in the moist flat-woods, with a retentive subsoil, and more or less humus on and near the surface, both *Osmanthus fragrans* and *Michelia fuscata* grow admirably. A plant of the latter, twelve years from the pot, stands twelve feet high and measures ten feet through, and for six weeks in spring is covered with thousands of miniature *Magnolia* blossoms, exhaling a deliciously pungent odor."

Magnolia (Talauma) pumila, from Amboyna and Java, is also occasionally found in the gardens of New Orleans, Mobile and Pensacola, but it is rarely found in Florida. Mr. P. J. Berckmans, of Augusta, Georgia, who grows it in the open air, writes me that it needs heavy soil and partial shade. It very probably will grow well in Florida if grafted on *Magnolia foetida*.

Mahernia odorata, a native of the Cape of Good Hope, of which a small specimen was planted, has spread in such a way that it now covers the ground about three feet in diameter. The branches—in fact, the whole plant—rest on the ground. The yellow flowers are as fragrant as violets, but the shrub has little ornamental value.

Milwaukee, Wis.

H. Nehrling.

Foreign Correspondence.

Paris Letter.

AMERICANS who care for Orchids will find many admirable private collections in a tour through France, but most of these are at some distance from Paris, and although visitors are heartily welcome as a rule, it is advisable to make application for admittance. This may cause some delay, and I would therefore advise those with only a short time at their disposal to visit the greenhouses of the Jardin du Luxembourg. No provision is made for the admission of the public, as the greenhouses are under the control of the presiding officer of the Senate, separated from the public grounds and considered private. Nevertheless, students of botany and amateurs can apply to the head-gardener, Monsieur Opoix, at a second entrance, 64 Boulevard St. Michel, and a guide will be furnished to conduct him through the different houses. These houses contain a variety of plants, but are rich in Orchids, and especially so in *Cypripediums*. In fact, as many new *Cypripediums* have been originated in one of these houses as in any single house in the world, so far as I know. The late head-gardener, Monsieur Roch Jolibois, was an ardent admirer of that genus; he collected as many typical forms of it as possible, and he was very skillful and successful as a hybridizer. A considerable number of his new varieties were exhibited at the meetings of the National Horticultural Society, but they remain almost unknown to the general public, for they were sel-

dom staged at the horticultural shows, where their merits would have been advertised, and no funds are provided for figuring or publishing them. In this way it has not seldom happened that new crosses have been offered for sale in England and Belgium at high prices, while plants of the same parentage have been flowering for some years in Paris quite unknown to amateurs and commercial growers. Flowers are found on some of these *Cypripediums* all the year round, and at a visit which I made to these gardens on the last days of January I noted the following as deserving special mention. They are all varieties which originated in the Luxembourg greenhouses.

Madelaine Gaillot, obtained some years ago by crossing *Cypripedium Dayanum* with *C. insigne Chantini*. This is a vigorous plant with a stout brownish stem bearing two flowers. The upper sepal, with brown and greenish stripes, is beautifully edged with pure white, while the lateral sepals and the lip are strongly suffused with purplish red, the base of the lateral sepal being marked by distinct brown points.

Madame Octave Opoix is a variety which has been already described, although it is quite new and very graceful. It is a seedling of *C. superciliare* fertilized by *C. niveum*. The foliage is marbled with two shades of green, and the stems, ten inches long, bear one, or occasionally two flowers. The divisions of the perianth are broad and flat, and the flower, although not large, is quite showy. The color is nearly white, suffused with a tender lilac or lavender, the lip being a little darker. The lateral sepal is dotted on the margin, and the upper one is almost pure white. Among undescribed varieties I observed three striking ones. The first was obtained by crossing *C. ciliolare* with *C. Lawrenceanum*. The foliage is strong and marbled, dark green predominating. The stem is not less than two feet long; the flower is large and finely colored; the dorsal sepal is broad and firm, having dark stripes of green and purplish red, strongly marked on the whitish ground of the central part, and harmonizing well with the reddish edges of the sepals. The base of the lateral sepals is marked by beautiful dots, which, like the lip, are pale green suffused with reddish brown. A second seedling, noted for its distinct and intense color, was raised from *Cypripedium Lowi* crossed with *C. villosum*. The stems, some ten inches high, carry two or three flowers which are six inches across. The lip is green, lightly tinged with brown. The lateral sepals are darker in their upper part, dotted and ciliated. The upper sepal has strong brown stripes, which are narrowed close to the whitish edges. The flower has great substance.

A beautiful seedling of the *Barbatum* group, but of unrecorded parentage, is a strong grower with a very dark flower. The dark brown lip is of unusual size; the lateral divisions are scarcely lighter-colored, while the dorsal sepal has strong stripes on a light ground. Among plants which did not originate here I observed strong specimens of *C. villosum aureum*, many of them bearing flowers of a greenish golden yellow, much more vividly colored than the ordinary type, and the contrast of these colors with the pure white edge of the upper sepal was exceptionally beautiful. *Cypripedium Boxali atratum* was also in perfect flower and very attractive, the variety being distinct with almost black dots.

Among other Orchids, a fine specimen of *Laelia elegans* was carrying flowers on stems nearly nine feet long, and close to it an *Angrecum superbum* had five flower-stalks and twenty-eight leaves, each three feet and a half long. In a basket was a graceful old specimen of *Dendrochilum glumaceum* with thirty-five flower-spikes, some of them bearing flowers. Twenty plants of *Laelia autumnalis* from Mexico were brightening the corner of another house with flowers six inches across, of a beautiful lilac-pink, especially vivid at the point of the sepals.

In the *Cypripedium* house is a beautiful collection of a dozen varieties of *Cryptanthus*, which seem rather difficult

to cultivate. Planted in pots on tables, they were growing quite feebly. In another place these plants were placed in baskets of sphagnum and hung near the glass, where they grew finely. *Cryptanthus zonatus Brunei* was a mass of fine velvety foliage, green and white, and two feet across. *C. zonatus viridis*, of a light golden green, is nearly as handsome. *C. concidens* and *C. acaulis ruber* are in smaller tufts, but in perfect health. *C. pumila* has longer and stalked leaves and is quite effective. *C. Bucheri* has also petiolate leaves, which are dotted.

In the greenhouses and large cool-houses are many large specimens of Palms, Musas, Acacias and tender evergreens. Much attention has been given during late years to the cultivation of *Cyclamen Persicum*, and immense quantities of these plants are sold from September to March or April. It has become a favorite plant for conservatories, and the cool-houses now are gay with it. The English growers for a long time were our teachers, and it was supposed that the cooler and moister climate of England was better suited to the cultivation of these plants than ours. Still the florists about Paris have recently been very successful, and a fine lot of young plants with single flowers were exhibited here last December. The plants, although strong and bearing flowers of many and vivid shades, were not yet twelve months old; the pots were rather small, but the plants were as large as commercial plants usually are in the market at fifteen to eighteen months old. The grower of these plants is Monsieur Max Jobert, of Chatenay. The same grower also staged some so-called double-flowered *Cyclamens*, although some of these were only plants with curiously abnormal flowers, in the style of those described by Mr. Theodore Holm (*GARDEN AND FOREST*, vol. v., p. 234). Some of them, however, were really double, the inner organs being more or less petalized. Monsieur Jobert remarks that such plants will give double or semi-double flowers at the beginning or in the height of the blooming season, but at the last the flowers are nearly single and will seed freely, a good percentage of the seedlings being double. Another strain is raised by certain florists, and especially by Monsieur Arrileaux, of Aumont, near Paris. The stems are stout, and not so numerous as in the ordinary single-flowered type. All the flowers are much larger and more effective. Each of the petals is deeply cut near the base, so that it seems like two, and the flowers appear to bear ten large petals. These are sometimes quite divergent, so that the flowers seem large. The strain is really a valuable one and is gaining in favor. Quite double flowers are often produced and sometimes they are found with unequal petals, but these plants are no better than single ones. But in other examples the surplus petals are numerous and fairly developed, and some of these new plants are really good. There can be no doubt that an interesting point in the development of the *Cyclamen* has been reached.

Paris.

Maurice L. de Vilmorin.

New or Little-known Plants.

Pyrus Miyabei.

THIS tree, of which a figure is published on page 85 of this issue, and which was described on page 213 of our last volume, is one of the most distinct and interesting plants of the genus to which it belongs. An inhabitant of northern Japan, *Pyrus Miyabei* is exceedingly common in the forests of Yezo, where it often attains the height of sixty feet. It may be expected, therefore, to thrive in the northern states, especially as it grows under conditions in which several other trees perfectly hardy here flourish in their native country. It is remarkable that this tree has so long escaped the serious attention of American and European dendrologists, a fact which, perhaps, can be accounted for by the difficulty of procuring seeds, which are, apparently, not produced in large quantities, and are often injured by insects or disease.



Fig. 29.—*Pyrus Miyabei*.—See page 84.

Of the trees of northern regions known to botanists, and not yet brought into our gardens, *Pyrus Miyabei* is one of the most promising.

C. S. S.

Cultural Department.

Eucharis Amazonica.

THE perfection to which this plant can be brought is not generally realized. In good establishments poor, starved specimens are often seen in some out-of-the-way corner, where, having failed to flower satisfactorily, they have been put aside to make room for other plants. And yet I know of no plant that will better reward the grower if he handles it properly. Proper potting, of course, is the first essential. If the plants are in an unhealthy condition, the soil must be shaken from them entirely, and they must be repotted in a mixture of three parts good fibrous loam, one of dried manure, one of leaf-mold and one of coarse sand. They are best placed in a corner of the stove where they can have plenty of light and at the same time be shaded from the strong rays of the sun. It is important not to give too much water until they have begun to grow. They will soon make roots freely, and once the pots are well filled they will require manure-water two or three times a week, a weak solution at first, increased in strength as the plants become more vigorous. The plants should not be allowed to flower until they are in a strong, healthy condition, and no plant is more easily brought into flower at a fixed time than the *Eucharis*. Exactly twelve weeks from the time when it is desired to have them in bloom they should be removed to a cool, shady house and kept thoroughly dry for six weeks, when they should be returned to the stove and supplied with all the water they require. Flower-spikes will soon begin to show, and by the end of six weeks from the time they were brought in the flowers ought to be at their best, providing a stove temperature of sixty degrees at night and seventy to seventy-five by day has been steadily maintained. If the heat is apt to be a little low, as is often the case, it is safer to allow a week longer. After the flowers have been cut, the plants should be fed freely. They may be dried off at the end of three months and flowered again, giving thus two crops a year. But this is not generally necessary. Their waxy white flowers are most prized during the winter months, and it is better to have two sets of plants, bringing the one in for Christmas and the other for Easter. A whole season is thus afforded them to make their growth, and the plants are thereby preserved in a more vigorous condition. They must not be allowed to become severely pot-bound, as the growth of the bulbs would be interfered with. The best time for repotting, when this is necessary, is after the last flowers have been cut.

When the plants have grown large enough to fill fourteen-inch pots and require shifting, it is advisable to break them up, as this size is large enough for all general purposes, and they are difficult to handle if much larger pots are used. From a pot of that size ten to fifteen spikes can be regularly cut. The plants should be broken into three pieces and each section placed in a nine-inch pot. If they are kept growing freely for a season and placed in ten-inch pots during the following spring, they will be established by the succeeding fall and may be flowered when required.

New Dorp, Staten Island.

W. Scott.

Flowering Plants for the Conservatory.

AMONG the notably good plants that one too rarely sees in the average conservatory is *Luculia gratissima*, with its abundant corymbs of rosy and deliciously fragrant flowers. Few greenhouse-plants which flower in winter equal this when properly grown. The very best specimen of this plant that I have seen was planted out in a *Camellia*-bed, and subjected to the same conditions as the *Camellias* in every respect, except that after the *Luculia* had finished flowering it was allowed to become somewhat dry at the root, in order to ripen the growth before being pruned. After a rather close pruning, a top-dressing of fresh soil was applied, and the plant was started into growth by thorough watering and syringing. The temperature of the house was kept during the winter between forty-five and fifty degrees, probably averaging forty-eight degrees, and it was ventilated freely whenever the weather would permit it. *L. gratissima* is propagated by means of cuttings, or by seeds when these are procurable, and the cuttings are best made from rather weak growths, as the strong sappy growths do not root readily. Aphis and thrips are the insects most likely to trouble this plant, and they should be removed by

syringing with tobacco-water, as the *Luculia* does not take kindly to fumigation.

Lapagerias are among the finest of cool-house creepers, and can be managed very well under similar conditions of temperature and atmosphere to those recommended for *Luculia*. If the conservatory is so situated that the *Lapageria* can be planted in the shade of a north wall so much the better, for this plant requires the coolest possible treatment during our torrid summers. A rather deep brick-walled bed, with a considerable quantity of broken brick and charcoal for drainage, and filled with a coarse mixture of loam and peat, suits this plant. There should be more peat than loam in the soil, and during the growing season the water-supply should not be scantied. The young shoots should be carefully trained on wires, and will need close watching against slugs, which are particularly fond of them.

Both *Lapageria rosea* and its white form are very desirable, and they show to advantage when grown together, so that their beautiful bell-shaped flowers in contrasting colors are mingled. *Lapagerias*, while not strictly winter-flowering plants, can be treated so as to prolong their blooming season, and old-established specimens show more or less bloom through nearly the whole year. Layering is the best method of propagation, but is a somewhat slow and uncertain operation.

Erica persoluta alba is one of the best midwinter-flowering plants for the cool-house, though, like most of the *Heaths*, it requires a cautious management, and specially objects to lime water and to a close atmosphere. A peaty soil and firm potting are essential for this plant, and during the summer it can be best managed when plunged outdoors in a partly shaded frame, where free circulation of air can at all times be had.

Daphne Indica alba is not a showy plant, but its trusses of fragrant jasmine-like flowers are useful for cutting. It grows and flowers better planted out in a cool-house than when pot-grown. Some of the *Acacias*, like *A. pubescens*, *A. Riceana*, *A. Drummondii* and *A. armata*, can hardly be dispensed with. Their flowers are not excelled in gracefulness, and their clear yellow is a favorite color.

Holmesburg, Pa.

W. H. Taplin.

Hybrid Perpetual Roses for Forcing.

WELL-GROWN hybrid Roses are always appreciated, especially when they are to be had early in spring from plants that have been grown for a limited number of first-class flowers. If we want good Roses, disbudding must be practiced as rigidly as with *Chrysanthemums*. A plant is often willing to attempt more than it can possibly perform well, and, therefore, the cultivator should confine the efforts of the plants within the limits of their powers. To do this effectually all weak wood must be cut out at pruning time, leaving only the strong, well-ripened shoots, and these again must be disbudded and no more than one shoot allowed to grow from each branch, unless the old wood is very vigorous. Roses for forcing are generally pot-grown. Sometimes they are planted out to make their growth in summer, and often they are allowed to remain in the pots all summer in a more or less starved condition, and are then expected to flower well year after year. Roses of this class will give good returns for an indefinite period if treated well, and it is almost impossible to treat them too well. The time when they most need attention is after the flowering season, when the growth is being made which is to produce the crop of the following year. I have found that to do them well with the least labor, it is best to grow them in boxes six inches deep and wide enough to hold two rows of plants, the length being determined by circumstances; our boxes hold eight plants each. Roses grown in this way require less attention as to watering, both in summer and spring; the plants make better growth, which may be ripened off at the pleasure of the grower by simply placing the boxes on edge in the fall when the wood needs ripening, and there is no comparison between the flowers of these plants and of Roses grown in pots. This is a good time to start Roses in boxes, for they may give a crop this spring, before making the growth that is to flower a year from now. All things considered, budded Roses are better than those on their own roots, as they grow much stronger and yield better if the union is buried under the soil. They should be planted in good strong loam and bone-meal, and no other stimulant will be required the first year. After this we rely on a top-dressing every spring and frequent applications of manure-water during the growing period. When warm weather comes the boxes are placed out-of-doors, where they remain all summer until they are pruned and placed in the houses after the removal of the *Chrysanthemums*. If the growth is vigorous and well-ripened

it is left at least eighteen inches long, so that when the first crop of flowers is cut off the lower buds start and produce an equally good crop, and from the earliest boxes even a third crop of bloom is obtained, though not so good as the first crops. It will thus be seen that by double-cropping the boxes a great saving of space is made, and this at a period when space in the greenhouses is of most value.

The best all-round dark Rose is Ulrich Brunner; with us it has superseded all others, though the new Madame Susanne Rodocanachi is very promising, and when it becomes better known it will be a great favorite on account of the brilliancy of its color. Heinrich Schultheis is the best early deep pink; after this Mrs. John Laing and Magna Charta. We intend also to try Gustave Piganeau, which is much in favor wherever it has been tried. It is rated very high in Europe, having won the silver medal for two successive years at the Crystal Palace, London, in competition with all other kinds. It is of largest size, perfect shape and of rosy-crimson color.

Boston.

Plantsman.

Annual Flowers from Seed.—III.

CENTAUREA CYANUS is a hardy annual of weedy habit, which has had an accelerated vogue lately from its being said to have been the favorite flower of the late Emperor William of Germany. It is scarcely necessary to say more of the well-known Ragged Sailor than that it furnishes great quantities of useful flowers of shades ranging from blue-purple through washy reds to white. The plants germinate readily from seed at any season, and as the flowers are prolific of seeds the plants are apt to overrun the borders. The yellow Sweet Sultan, *C. suaveolens*, is a very handsome *Centaurea*, with finely cut yellow petals and smooth large ovary, and is useful and lasting either for wear or decorations. This is less weedy than *C. Cyanus*, and seeds will require careful treatment, as recommended for general plantings.

Chrysanthemum coronarium is the only annual *Chrysanthemum* useful for cutting, and is an easily grown plant, coming into flower early. The flowers are yellow, or white with a tinge of yellow, double, and very lasting, though the finely cut foliage is rather soft. The plants flower profusely during the season, and there are few annuals which give as large or continuous crops. Seeds may be sown with the main crop of annuals, and they germinate readily.

Dahlias are tender perennials, but the very dwarf strains recently introduced as Tom Thumb *Dahlias*, are as easily grown as annuals, making strong plants from seed by flowering-time. Of course, one will not get special forms or colors from seed, but a good strain will give all the leading colors and variations, with large flowers and broad petals. The plants are about one and a half to two feet high, much-branched and very free-flowering. They require no staking, an advantage which will be appreciated by growers of the old strains. The French strains of these *Dahlias* are the best, the colors being clearer and the flowers larger than the English. The flowers, if cut when just opening, will last longer than if left on the plants until pollenized. The seed of these *Dahlias* may be sown in the seed-bed in April or early May, and they only require a little care in watering at first.

The single Chinese or Indian Pinks, *Dianthus Heddewigii* and *D. laciniatus*, while not fragrant, are useful biennials, and flower the first season from seed. The flowers are remarkably varied and attractive, mostly in shades of red in many odd combinations. The double varieties are as readily grown from seed, but are not attractive.

Gaillardia grandiflora, or Blanket-flowers, are rather coarse, and the variegated forms are much more pleasing in the borders than indoors, where they are neither specially lasting or agreeable. *G. Lorenzianum picta* are more charming as cut flowers, their composite heads being rather light and graceful. *G. amblyodon* has single flowers of a peculiar mahogany color, and is well worth cultivation, but it should be grown in a rather dry sunny place.

Gypsophila paniculata will flower the first year from seed, and is an indispensable plant in a garden of annuals, as its mist-like sprays of bloom furnish the touch of lightness and grace so desirable in floral arrangements.

The *Helianthus*, or Sunflower, may best be represented in the garden by the Miniatures, a free-flowering strain which produces small, single, pleasing flowers, dark yellow, with brown centres. They are strong-growing plants, produced from easily germinated seed.

A garden is not complete without Marigolds, if for nothing else than old associations, though their odor is rather pronounced. Nor should the little *Tagetes* be forgotten, the

dwarf French and the great African kinds, whose yellow or golden flowers are among the most brilliant of summer flowers. These plants, as is well known, offer no cultural difficulties.

Mignonette, for fragrance and modesty, is the antithesis of the Marigold, but is a plant not so readily grown. It resents root-disturbance, and the seed should be planted in well-worked ground, kept damp by shading until germination takes place; the plants should then be thinned out and the ground mulched with well-rotted manure. The plants should not be allowed to suffer for lack of moisture at any time. There seems little doubt that carefully selected seed of *Mignonette* will give specially vigorous plants with large flower-heads, though the largest of these are produced by special care in the way of removing surplus shoots. M. Machet seems to be the most generally satisfactory strain of the many offered.

For evening decoration there are few white-flowered plants which can vie with *Nicotiana affinis* when cut with long stems. This is a strong-growing annual, which propagates freely in the garden by self-sown seeds. Strong plants are quickly formed, with clumps of large, spreading leaves. From these rise the tall flowering stems, bearing numerous pure white flowers with long tubes and flat-spreading corollas. The plants are rather ragged-looking until afternoon, when the flowers expand, with possibly the fault of rather pronounced fragrance.

Nasturtiums are quite the commonest of annuals grown in almost every garden, yet they are ever among the choicest of flowering plants and possess almost all the desirable qualities of a popular flower. Easily grown, showy, with a wide range of coloring, fragrant, and with bright, fresh-looking foliage, they add to their good qualities the habit of growing at their best in odd, dry corners, where few other plants will exist. The dwarf *Nasturtiums*, in neatness and finish of habit, are rather superior to the tall varieties, but for general garden purposes the latter are much more satisfactory, both for abundance of flowers, for covering waste places, or for trailing from veranda boxes or baskets. Some florists offer a multitude of named kinds, and these are so cheap that the colors should be bought separately, as the mixed seed is apt to contain an undue proportion of the stronger-growing kinds with washy colors.

Elizabeth, N. J.

J. N. Gerard.

Carnation William Scott.—Those who are in search of a good pink *Carnation* would do well to try this variety; it is similar to Grace Wilder in habit, and resembles it in color, too, when at its best. There appears to be no tendency in William Scott to burst its calyx; the petals are beautifully fringed and the blooms are well built up in the centre. It has taken a long time to produce a good *Carnation* that would take the place of Grace Wilder, but there are several candidates now that promise well, and hereafter there should be no excuse for ragged flowers or those poor in color. There is great difficulty now in knowing how to select from the many new ones sent out each year, and unless one has some knowledge of the history of a new kind, it is best to wait until it has stood the test of the first year after distribution. This plan, of course, would be bad for the disseminator, but would generally benefit the cultivator. New *Carnations* are either overpropagated when put on the market, or else extremely local in their good behavior, this latter trait even showing itself in the same town or locality. English-raised varieties seldom do well in this climate, but we are much pleased with Winter Cheer, tried this season for the first time; it is a good scarlet of bright color and does not turn dark as some do; the habit is dwarf and very vigorous; thus far no rust has attacked it. As a pot-plant it is the ideal variety, as the stems are stiff and need no support.

South Lancaster, Mass.

E. O. Orpet.

Wire Netting for Peas.—In growing Peas in the garden for family use we had always "brushed" them until five years ago, when we procured some of the galvanized wire poultry-netting with inch-and-a-half meshes. For the early Peas we used netting twenty-four inches wide, and for the late varieties forty-eight inches wide. The Peas were planted in double rows, which were six inches apart. Stakes were driven about eight feet apart in the rows soon after the Peas began to show above ground, and the netting was stretched in the row and fastened to the stakes by means of small wire staples. The Peas cling to the netting as readily as to the brush. We find that it gives a much neater appearance to the garden, and at the same time is very much cheaper than brushing them. The labor of putting up the netting is much less than sticking the brush, to say nothing of the difficulty of procuring the brush in town or city. The wire netting will last a long time. We

have some that has been in use for the past five years and is still as good as new. Another advantage to be considered is that the peas can be gathered with much greater ease than when brush is used.

Ag'l Expt. Station, Newark, Del.

H. M. Beckwith.

[Professor Massey advocated this plan in GARDEN AND FOREST five years ago, and we have called attention to it several times since. New devices, however, are adopted slowly, and we are obliged to Professor Beckwith for this reminder that wire netting is invaluable for many uses in the garden, and especially where a low trellis is needed.—Ed.]

Solanum Seafortianum.—Under the name of *Solanum azureum*, this plant has been offered by various dealers, usually with glowing descriptions, and in one instance, it is said, to bear "Wistaria-like" trusses of bloom. It requires some imagination to see this resemblance, but still the flowers are pretty and very freely produced, and they are followed by clusters of bright red berries about the size of peas. Like most of the *Solanums*, this one is very easy to propagate, and almost any piece of young growth will soon take root in a warm house. Though new to the public, *S. Seafortianum* is not entirely new to horticulture, since it was sent to Kew from the West Indies some thirty years ago, although it was not distributed at that time.

Philadelphia, Pa.

T.

Correspondence.

Forest-land for Investment.

To the Editor of GARDEN AND FOREST:

Sir,—In your issue of January 24th I observe a reference by Dr. Brandis to my paper on "Timber as a Crop," read at the World's Fair Forestry Congress. Allow me to modify somewhat the impressions conveyed by this reference, and especially to the one that my recommendations were new, and not simply a repetition in new form of often reiterated thoughts. I have repeatedly urged during the last ten years that the lumbermen could, and should, cut with more regard to the value that their property might represent, after culling the merchantable part of it, demonstrating to them that this negative forestry can be practiced without any, or little, curtailment of present incomes. Such positive forestry as Dr. Brandis has in mind I have also repeatedly explained, and shown the conditions under which, even now, it may be made successful; see especially my report on the Adirondack League Club property, reprinted in the Report of the Forestry Division for 1890, where the following language is used:

"The absence of forest-management in the United States is due to various causes, mainly arising from the state of our cultural and material development. As long as the competition of wood-supplies from virgin lands, exploited for the best timber only, is to be met, forest-management will be beset with great difficulties from a financial point of view, yet it is not impossible, impracticable, untimely or unprofitable in the location and under the conditions in which the club's property is found. A near market and facility for bringing even inferior material to market profitably are the conditions, without which forestry is financially impracticable. Accessibility, easy, cheap and permanent means of transportation furnish the key-note of profitable forest-management."

The reasons adduced by Dr. Brandis for expecting a ready change in the prevailing treatment of our forests do not, however, seem to me altogether convincing.

The low figure at which virgin forest-lands can still be bought is the very reason that the bulk of our forest-owners, lumbermen, may not readily be deterred from doing what they do—namely, turn the merchantable parts into cash as quickly as possible, regardless of consequences to the remainder, and invest the whole proceeds in other lands to be treated the same way. When timber-lands become valuable, then there will be hope of greater care. The price of certain classes of timber has advanced, to be sure, but the price for lumber has not—that is, the margin of the saw-miller has been reduced. This, again, is antagonistic to a further curtailment on account of expenses in better administration, where the owner of the saw-mill and the owner of the forest are the same person. The diminishing rate of interest, no doubt, will aid in making forest-property more valuable, just as the decreasing quantity in the market will, but it will require years to make these changes effective, just as I believe that the predicted increase in the price of labor cannot be foretold as visible in the near future.

Altogether, the uncertainty as to when all these necessary economic changes will take place, although we confidently predict and expect them, is a potent element in deterring lumbermen from engaging in positive forest-management. They propose to reap while they can see the present crop, without caring for the future crop.

Immediate hope, therefore, lies mainly in the last reason adduced by Dr. Brandis, a tendency toward permanent family estates. This is growing in a small way, and the example would, perhaps, be more contagious if there were not so many drawbacks due to existing lawlessness and other risks affecting forest-property. Then, too, results in forestry make their appearance slowly, especially on the financial side.

In this connection it may interest your readers to know that the Forestry Division of the Department of Agriculture is now engaged in making a large number of measurements of tree-growth, from which to determine the rates of growth of our various species in various localities, as a basis for discussing the profitability of forestry. The Division seeks the co-operation of all who are interested and in position, by their access to lumber camps, to aid in this work, and will send out blank schedules and instructions for their use.

Washington, D. C.

B. E. Fernow.

The Longevity of Trees.

To the Editor of GARDEN AND FOREST:

Sir,—Can you give me the title of any work on the trees of Massachusetts or North America that gives the ages to which the Oak, Elm and Pine live—that is, their longevity in many instances? No mention seems to have been made of this subject by Mr. George B. Emerson in his works upon the trees of Massachusetts.

Haverhill, Mass.

N. S.

[The life of a tree depends upon the amount of nourishment it can obtain from the soil, and, this being an uncertain quantity, it is impossible to fix the length of life of the individuals of any given species. Trees, like Oaks, Hickories, Walnuts and Chestnuts, with long deep roots penetrating into the subsoil, are able to obtain a greater amount of food than trees with roots which remain near the surface of the soil, like the Elm, Alder or Pine, and, therefore, as a rule, are longer-lived. A White Oak might live in good soil for centuries, or it might exhaust the plant-food within reach of its roots in a comparatively short time, and then perish. Theoretically, a tree furnished with sufficient nourishment and guarded from accident might live indefinitely, as it renews itself every year by a fresh layer of wood just inside the bark, the death of the interior of the trunk making no difference to it; and the only real reasons why trees do not live forever are found in the exhaustion of the soil in which they grow and their liability to destruction by storms of wind, lightning, and other vicissitudes to which they are subjected.]

A discussion of this whole subject will be found in an interesting paper on the longevity of trees, written fifty years ago by Professor Asa Gray, in *The North American Review*, and republished in his *Scientific Papers*.—Ed.]

Notes from South Lancaster, Massachusetts.

To the Editor of GARDEN AND FOREST:

Sir,—The middle of February, with two feet of snow on the ground, is not the best time to visit South Lancaster, but there are horticultural treasures in the glass-houses here which will repay one for a pilgrimage hither at any season. At Mr. E. V. R. Thayer's I found a rapidly growing collection of Orchids under the charge of Mr. Orpet, and, although but three years have passed since the collection was begun, there are few private places in New England where a better or healthier assortment can be found. It was rather early to see many kinds at their best, but I noticed a fine lot of *Cattleya Trianae*, while *Lycaste Skinneri* was growing vigorously and giving quantities of flowers. *Phalænopsis Schilleriana* and *P. amabilis* were carrying fine spikes, while *Oncidium Papilio*, *O. splendidum* and *O. flexuosum* were most prominent of that genus. Of the *Cypripediums* a few of the Insigne group were still in flower, as were *C. Chamberlainianum*, *C. barbatum*, *C. O'Brieni*, *C. Lowii*, *C. villosum*, *C. tonsum*, *C. leuchorhodum* and others. *Dendrobium Phalænopsis Schröderianum* was especially good, with about fifty plants in flower. Too much can hardly

be said in praise of this superb variety, with its rich colors, which for corsage bouquets is unrivaled. *Dendrobium nobile*, *D. crassinode* and *D. Wardianum* were in admirable bloom, while *Epidendrum radicans*, *Phajus grandifolius* and *Odontoglossum Rossii majus* were in luxuriant health and flowering freely.

In a recently erected *Odontoglossum*-house, which is not yet fully tenanted by Orchids, was the finest lot of herbaceous *Calceolarias* I have ever seen. The plants were in eight or ten inch pots, and their thick leathery leaves showed how they appreciated the cool, shaded and moist weather provided for them. Some two hundred *Cyclamens* in the same house were smothered with bloom, and showed many exquisite varieties. In one of the cool-houses a finely flowered lot of *Erica persoluta alba*, a plant which is worthy of more extended appreciation than it receives, was showing its high value as a decorative plant. In the Rose-house American Beauty was the only variety grown; the plants were in fine health, although off crop at this time. A batch of these plants in pots was flowering, however, very satisfactorily. The much-discussed rust had attacked the Carnations here badly, but Mr. Orpet finds that he can hold it in check by syringing with Fir-tree oil, and his plants seem to be growing nicely out of the trouble and are carrying fine crops. Mr. Orpet is greatly pleased with J. R. Freeman, a dark Carnation, and he prefers it to Ferdinand Mangold. Winter Cheer, a European importation, with bright scarlet flowers, very stiff stems and firm calyces, also pleases him. In the Violet-house, Lady Hume Campbell was blooming profusely. No other variety is found here, though this kind is not by any means disease-proof. Very little spot, however, was seen on the plants. The flower is lighter in color than Marie Louise and considerably larger, since the average bloom will more than cover a half-dollar piece. At Mr. John E. Thayer's we had evidence of the value of this Violet, where a house of it was a stretch of pure blue, with large flowers on good stiff stems. Mr. J. T. Clark, the gardener here, also has a quantity in cold-frames, which were doing equally well, and only a slight trace of disease was noticed among them. Altogether they were the best we have seen this season. A house full of Bride and Mermet Roses was in superb health, and the plants were carrying a fine crop of flowers. Among the Carnations, Hector was making a remarkable show; its vigorous habit, long stems, large, brilliant scarlet flowers and freedom from rust altogether mark it as the best scarlet Carnation in cultivation. There was a good general collection of tropical plants in the stove-house, including a few *Cattleyas*, *Cypripediums* and other Orchids, while a fine batch of *Streptosolon Jamesoni* was in full beauty in the cool greenhouse. This plant has little value commercially, but its ease of cultivation and high decorative quality at this season make it indispensable in every private conservatory.

Taunton, Mass.

W. N. Craig.

Mulberries.

To the Editor of GARDEN AND FOREST :

Sir,—In the interesting article upon the Red Mulberry-tree, on page 23, I notice some misleading statements, particularly the one which says that "no attention has been paid to improving the fruit [of the native species] by selection or cultivation." It is true that no definite attempt has been made in this direction, but it should also be said that at least three commercial varieties of Mulberries are the offspring of our native Red Mulberry—the Hicks, the Johnson and the Stubbs. The article seems to reassert the old statements that *Morus nigra* is the only species cultivated for its fruit, and that *Morus alba* is not used for this purpose. In this country, however, *Morus nigra* is scarcely known as a fruit-bearing plant, at least outside of California, while our most popular varieties belong to *M. alba*. In this respect, our Mulberry culture seems to be unlike that of every other country. These matters were fully explained in Bulletin 46 of the Cornell Experiment Station.

Ithaca, N. Y.

L. H. Bailey.

Recent Publications.

British Forest Trees and their Silvicultural Characteristics and Treatment. By John Nisbet, D. Ec. Macmillan & Co. : London and New York. 1893.

At least seven-eighths of this book is taken up with careful but concise descriptions of the chief silvicultural characteristics of the timber-trees of Great Britain. Trees which are planted simply for ornament rather than

for profit are not considered, but the habits and requirements of forest-trees proper are thoroughly investigated in order to show the adaptation of each species to the group of conditions under which it is likely to thrive. Take, for example, the so-called Scotch Fir, *Pinus Sylvestris*, which is the first on the list. After a paragraph on the distribution of this tree, its form and its root system are both explained, then the situation and soil to which it is best adapted, with the reasons for this adaptation. Next comes a chapter on its requirements as to light and its sensitiveness to shade from above or from the side. Its productive capacity and the time in which it attains maturity are then discussed, with its treatment under different periods of rotation. Under the head of "Liability to Suffer from External Dangers" we have a list of the insects and diseases which attack it, together with the amount of damage which fire and animals, storms and accumulations of snow and ice on its branches are likely to inflict upon it. All this is preliminary to the practical chapter on the silvicultural treatment of this Pine, in which, with interesting fullness of detail, we are instructed as to the methods of forming and reproducing pure forests of this species, as well as mixed forests in which it is the most prominent tree. Other timber-trees capable of growing in pure forests are treated in the same way, including the Norway Spruce, Silver Fir, Larch, Beech, Oak, Birch and Alder, with some minor species which are not found in pure forests in Britain, like the Austrian Pine, Nordman's Fir, our White Pine, Douglas Fir and others.

Few, if any, of these trees, except those which have been introduced into England from America, are ever likely to play a leading part in forest-planting in this country, and, therefore, the immediate practical directions of this manual will be of little use to the owners of forests in America, and yet we believe that no one who meditates planting a new forest, or taking care of an old one, can read the book without a great deal of profit. In the first place, it will be a point gained when the distinction between silviculture and arboriculture is more generally understood. We know something of the cultivation of trees as individuals, but of forest-culture or the economical production of timber we have hardly any knowledge—theoretical or practical. For the fundamentals of the science of forestry, as well as its practice, we have still much to learn from the Germans and other European people. Mr. Nisbet's careful rules for treating Scotch Fir and the English Oak cannot be directly adapted to any American trees in any American climate, but they will convince the reader how infinitely varied are the conditions which must be thoroughly grasped and understood before we can hope to inaugurate any complete system of scientific forestry. It should be added that the earlier parts of the book, in which certain general principles are laid down, contain many laws and many facts that will be needed by one who purposes to attack the fundamental forest-problems of any country. The chapter on "The Differences of Forest-trees as to growth in height, girth and cubical contents," cannot but open fresh fields of thought to every reader who has not investigated these subjects; while the chapter on "The Inter-relation between the Forest and the Soil on which it grows" contains matter of importance to every owner of an acre of woodland. Those who are in the habit of thinking that all the organic matter which is on a forest-floor, and which will ultimately decompose into leaf-mold, can be burned up every year or so without injury, would do well to ponder on the following paragraph :

It seems hardly open to question that the one factor in regard to the soil of greatest importance, from the silvicultural point of view, is humus. Given a sufficiency of vegetable-mold, or humus, all the physical factors are aided, and soils otherwise unsuited for the growth of the more exacting species of trees become perfectly adapted to their requirements. The immense improvement which takes place in soils under dense forests of Beech and Spruce is a striking proof of the invaluable soil-improving qualities of mold.

Notes.

Florida is now sending to this market the best peas, beets and string-beans, and immense heads of new Savoy cabbage, measuring more than a foot in diameter. Jacksonville strawberries are on the street-stands at twenty-five cents a quart, although, of course, choice strawberries command much higher prices. Beautiful and fresh seed-parsley comes from Bermuda, besides the highest-priced potatoes now in market. The showiest-looking celery is now coming from New-Orleans, although it hardly equals in flavor the northern-grown, especially that now coming from Rochester. Hot-house tomatoes are in small supply, and they bring fully twice as much as the southern-grown. Charleston is sending the best asparagus. Boston and New Orleans cucumbers are quoted together at \$2.00 a dozen, while the very best cucumbers come from as far north as Vermont. Choice dandelion and chervil are sent from Long Island.

At a meeting of the Pennsylvania Horticultural Society last week, Mr. Joseph Meehan read an instructive paper on "Street Trees in Cities," in the course of which he explained that no city can expect to have good trees when every property-owner is allowed to plant or not to plant as suits him, or to retain the control of the trees after they are planted, with the privilege of pruning or mutilating them as he sees fit. The city should have the control of planting and care of all street-trees, and the entire work should be in the hands of a skilled commission. In the discussion that followed it was the general opinion that there was no more reason why property-owners should plant the trees in streets than they should lay their own sewers or pavements. The result of the discussion was that a committee was appointed to bring this matter before the Councils of Philadelphia with a view to secure an ordinance for the appointment of a street-tree commission. Messrs. Robert Craig, Thomas Meehan and Edwin Lonsdale were named as a committee.

In an interesting paper entitled "Flowers of the French Riviera," by Mr. Henry L. de Vilmorin, which has been reprinted from the *Journal of the Royal Horticultural Society of England*, it is stated that of the Acacias which are used for the production of flowers for commerce, the graceful feather-leaved *Acacia dealbata* is far the most commonly used. It grows to be a large tree and begins to flower as soon as it is three or four years old, and the blooming season lasts from January to the end of February. These flowers are distributed all over Europe, and they command at shipping-points about \$10 a hundredweight. In order to anticipate the blooming season of this *Mimosa*, as it is invariably called in the trade, flowering branches are cut sometimes a fortnight before they would bloom in the open air, and then with their butt ends steeped in water they are submitted to the action of moderately heated steam. The flowers will expand in ten or twenty hours, and they are said to last as long afterward as if they were cut directly from the tree. Large tin vats are prepared for this purpose and the process is very profitable, since the first consignments of the *Mimosa* fetch a high price at the opening of the season.

Within the past few years it has come to be a matter of common knowledge that certain bacteria which are called *Rhizobia* live in tubercles upon the roots of leguminous plants, and that the two forms of life have some mutual beneficial relation. These plants can thrive without the bacteria, but they thrive better with them, and the bacteria have the power of assimilating the free nitrogen of the air for the use of the plant. Some investigations of uncommon interest have recently been undertaken in the University of Illinois to ascertain whether these *Rhizobia*, which help Clover, for instance, could be transplanted from the roots of that plant to the roots of Indian Corn and there continue their work of assimilating nitrogen for their new host. The results of the experiments are not yet conclusive, but it seems probable that the bacteria which live on leguminous plants are capable of being sufficiently modified to develop to a certain extent in the root-cells of Indian Corn, and that when they grow there they do produce increased nutritive changes in the Corn. Since nitrogen is the most expensive element of plant-food that needs to be applied to the soil, one hardly dares to predict what might be accomplished if these minute organisms could be cultivated and then applied helpfully to the roots of different crops.

Under the heading of "New Japanese Magnolias," a correspondent of the London *Garden* congratulates the horticulturists of England that two new Magnolias—namely, *M.*

hypoleuca and *M. Watsoni*—have been recently imported from Japan, and that another beautiful *Magnolia*, *M. parviflora*, is now for the first time offered for sale in that country. All of these trees were introduced into American gardens many years ago. *M. hypoleuca* was figured in *GARDEN AND FOREST* in 1888 from a tree standing in this city, which was then twenty-eight feet high, with a trunk nearly three feet in circumference three feet from the ground. This plant was sent to this country in 1865 by Thomas Hogg, and has been largely propagated ever since at the Parsons' nurseries in Flushing, Long Island. Another fine specimen of this tree is also to be seen in Dr. Hall's garden at Warren, Rhode Island, which he imported about 1870. This tree was noticed in a description of Mr. Hall's Japanese plants in *GARDEN AND FOREST*, vol. ii., p. 536. *M. parviflora* was also introduced many years ago by Thomas Hogg through the Parsons' nurseries, and it is probable that *M. Watsoni* has been distributed from the same place as a variety of *M. parviflora*. Mr. Hogg found this plant in the mountains, and as it closely resembles *M. parviflora* in many respects, he considered it a form of that species, although it is probably distinct. It has been flowering for many years at Flushing, and has occasionally produced fruit.

At the recent meeting of the American Carnation Society, Professor J. C. Arthur, in an interesting paper, showed that there are less than half a dozen well-marked fungous diseases which affect Carnations. He gave a description of these diseases, and showed as clearly as it was possible in words how any one with a small magnifying-glass could decide for himself what special fungus was affecting his plants. The most important suggestion in Professor Arthur's lecture was that when this or any other society brings together a display of flowers for examination and comparison they should always have a collection of diseased plants. Each member could bring such material as was convenient, not only to show to others who did not know the diseases, but also to satisfy himself whether his own diagnosis was correct. As there is usually a botanist at these meetings, he could be invited to bring his microscope, and be in readiness to determine doubtful cases, and he could also explain by living examples how the various fungi and the different diseases could be distinguished. If Carnation-growers could not be relied upon to bring diseased plants, it would be easy for the secretary to secure enough plants affected by the various diseases to make an instructive object-lesson for every visitor. What is needed now is specific knowledge relating to the life-history of all these parasitic plants, so that the proper remedies can be intelligently selected and administered.

Dr. Wheeler, the chemist of the Rhode Island Experiment Station, and Mr. Tower, the assistant agriculturist there, while making some experiments last year for the purpose of devising some practical method of treating seed tubers for the prevention of Potato-scab, observed what had been noticed before, that air-slacked lime applied to the soil in some instances seemed to promote the development of the scab. Since there can be no longer any doubt that the disease is caused directly by the growth of a fungus on the tuber, a very careful study was made of the subject. It was considered possible that the use of lime or ashes might help to retain the moisture in the soil, and in so far as they do this they might favor the growth of the disease-germs. It is possible also that lime may be a direct source of food for the scab fungus. Investigation seemed to show, however, that it was much more probable that a dressing of slacked lime on a sour soil overcomes its acidity and in this way furnishes more favorable conditions for the growth of the minute plant organism which produces the scab. Of course, since this is a specific disease, if the soil and the manure applied are free from the germs, and if the tubers can first be effectually sterilized, then lime can be applied to the soil without danger, and it may help the growth of the Potato, to which an acid condition of the soil is hostile. The best treatment now known for the destruction of the germs of this fungus is to dissolve two and a half ounces of corrosive sublimate crystals in hot water, and then add cold water enough to make fifteen gallons of the solution. This should be prepared in wooden vessels and well stirred. The whole tubers, after having been washed, may be put into a sack and dipped into the solution and allowed to remain there for an hour and a half, after which they can be spread out to dry, and can be cut and planted as usual. A solution of this strength will do no harm externally, but great care should be used with it, and it should not be poured out near wells, nor where fowls or stock can obtain any of it, for it is a powerful poison when taken internally.

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The Adirondack Reservation.

THE special report of the New York State Forest Commission, recently published, insists upon the importance of an absolute purchase of lands within the Adirondack preserves, and there can be no doubt that the ownership in fee-simple of these forest-lands is the first step to a perfectly satisfactory solution of this vexed problem. The proposal, that the state should acquire these forests by purchase and take absolute possession of them, has been discussed for several years in all the organs of public opinion throughout the state, and it is an encouraging fact that not one newspaper has at any time published a paragraph in opposition to the plan. To carry out this scheme, however, will cost a considerable sum of money at the outset, and if any method can be devised for diminishing this expense without sacrificing any of the advantages of immediate and complete ownership, it ought to be considered.

One plan which proposed to accomplish such an end was authorized in the law of 1893, under which the Forest Commission has power to offer a lumberman a certain sum, say, \$1.50 an acre, for forest-land, and give him the right to remove the Pine, Spruce and Hemlock within ten years. The privilege of cutting under this agreement is restricted to trees more than twelve inches in diameter at a height of three feet above the ground. At the end of ten years or less the state would in this way acquire absolute possession of the land, while the forest would consist of hard-wood trees and young conifers below the size-limit of the law. Such a forest would show little diminution in its canopy of foliage, and would, in most cases, serve all its functions as a protector of the water-supply, while the young conifers left would in time furnish another crop of timber and a revenue to the state. There is a good deal to commend in this method of securing uncut timber-land.

A plan which does not involve ownership in fee-simple, but which gives the state a certain control of the forests, is provided for in the law of 1892, under which a contract can be made between the state and a private owner to the effect that the state will grant exemption from taxes, provided the owner will agree to restrict all his timber-cutting to certain species

and to a minimum diameter of twelve inches on the stump. Of course, if it is impracticable for the state to own forest-lands, the next best thing to do will be to control the cutting of the trees. But the scheme as it stands is open to some serious objections. In the first place, a twelve-inch limit is too small for Spruce and Tamarack, and in the case of Poplar it is too large. The mere fact that a tree has attained a certain diameter on the stump may not be any reason why it should be cut down. Under correct forest-management a great many other things besides the diameter of a tree must be considered before it is condemned to the axe. It may be ready to cut simply because it has reached a certain size, or because it is so situated that its removal would be a benefit rather than an injury to the forest, or because some definite provision has been made for the occupation of the ground it covers by some other forest-growth, at least equally valuable. It can readily be seen that whole groups of Spruce might be cut away while there was nothing on the ground to replace them. It may be seen also that the constant cutting of Spruce, Tamarack and Poplar would eventually reduce the number of trees of these species to a marked degree. It is much to be feared, too, that the cutting of these or any other trees by lumbermen without any supervision of a trained forester would entail much more damage upon the woods than is necessary. That is, under the act as it stands a great many trees are likely to be cut which should be allowed to stand, and the removal of trees which it is quite proper to cut would be carried out in such a way as to do permanent injury to the woods.

What the state needs in the first place is skilled counsel in all matters of forest theory and practice. If there is to be any agreement between the state and private owners under which the state is to remit the taxes of forest-land, or, what is the same thing, to pay indirectly the forest-owners a certain sum of money for the assurance that the land is to be kept in permanent forest, it may as well be understood that such an assurance is worth little when the only restraint upon the owner is a limit to the size of the logs which he is to cut. The woods will never be safe until they are practically under the control of skilled foresters who will see that every operation is conducted with a view to increase or sustain the productive capacity of the whole. Of course, some concession must be made to owners of these lands, but in the long run they will receive more from their land, under scientific management, than they will if allowed to cut at pleasure above any arbitrary size-limit. It would be better for the state and better for the owner if a definite plan of management were first formulated with the understanding that all the work should be done under the direction and control of a competent forester.

SOME time ago the Legislature of this state, in a gush of easy-going benevolence, voted a million dollars to be used for furnishing work for the unemployed in the parks of this city. Ever since then the Park Commissioners have been pelted with censure on every side because they were not able to set two or three thousand men at work at once. Much of the work needed on parks cannot be done at all at this inclement season. Any work of importance must be carefully prepared for by preliminary surveys and estimates. If it had been understood that this money was to be expended in the course of a year, designs for improvements of various sorts could have been made ready, but as such a sudden appropriation was utterly unlooked for, it is not the fault of the Board that they are unprepared to spend it on sight to any good purpose.

One of the things which can be best done at this season is the thinning out and pruning of the trees in the woods of the new parks, as well as in Central Park. This is work which ought to be done. It is not a work upon which thousands of unskilled workmen can be used to any advantage, but it is a work which a well-organized Park Board ought to be ready to undertake with a strong force at a

moment's notice. As a matter of fact, however, under the system of political appointment that has prevailed here there is hardly one foreman in the entire force who is able to properly direct a gang of men in the woods, even after the trees which are to be felled have been marked. Of all "the unemployed" in New York who want work, there are probably not a dozen who know how to handle an axe skillfully. There ought to be in the employment of the Park Board many foremen who could go into the woods and select the trees which need pruning and those which need felling. Under proper management the superintendent should now have a skilled force with years of experience. But there is nothing like a trained body of men in the park service who have been educated and disciplined to park work, and if this necessary forest-work is attempted now on any considerable scale it will probably mean that a hundred men will be turned loose in the woods who may do damage in seven days that it will require seven years to heal.

We have urged, year after year, the necessity of proper work in these plantations, but the Park Board has never authorized the Superintendent to go ahead; no satisfactory survey has ever been made; no scheme of management has ever been adopted; no men have been trained for the purpose. There never was a more baseless assumption than the one that anybody can cut down a tree, and that any one knows what trees ought to be cut. These park-woods will never become what they should be until the axe is used freely in them, but, on the other hand, there is nothing which can do so much harm in the woods as an axe in the hands of an ignorant man.

The Pride of China Tree.

THIS tree, *Melia Azedarach*, is the type of a small family to which the Mahogany-tree also belongs. It has been so long cultivated in the tropical and extra-tropical regions of the two worlds, that it is impossible to locate with any precision its original home, although the Swiss botanist, Boissier, believed that it was indigenous in some of the provinces of northern Persia.

The China-tree was introduced into the United States about a hundred years ago by the French botanist, Michaux, who first planted it in the neighborhood of Charleston, South Carolina, where he had a garden, into which he brought American plants gathered in his various journeys undertaken under the auspices of the King of France, and where he planted, too, a few exotic trees which he thought would thrive in the southern states. The *Melia* found in the Carolinas the conditions which suited it, as it has wherever it has been planted beyond the influence of severe frosts, and soon established itself in the neighborhood of dwellings, and then spread into the forest, where it is now, in some places at least, as much at home as any native tree. The *Pride of China* rarely exceeds the height of fifty feet, and develops a wide-spreading head, which makes it desirable as a shade-tree. The compound twice-pinnate deciduous leaves, of a dark lustrous green, make a light and graceful foliage. The flowers, which are produced in clusters, are of a pale bluish-lilac color and quite fragrant. The fruit is a globose yellowish berry-like drupe, containing a round stone, which is five-celled, with a seed in each cell.

The root of *Melia* has been used in the southern states medicinally to destroy intestinal worms, and the whole tree has the reputation of being obnoxious to insects. For this reason it is often planted near stables to drive away flies, and that the horses may eat the fruits, which are said to prevent bots. In some countries the stones are strung like beads for rosaries, so that the tree is often called "arbor sancta." The seeds yield an oil which may be used in lamps. The berries have received the reputation at the hands of some writers of being poisonous; certainly, they are not so to horses, and in India they are used in medicine.

In a recent issue of *The Garden and Field*, of Adelaide, the alleged poisonous nature of the fruit of this tree is discussed, and it is asserted that "a *Melia*-tree requiring pruning, its superfluous branches were cut off and thrown over a fence into a pasture. Several pigs and cows ate the berries; the result was that the pigs died and the cows became very ill, but recovered after three or four days, one effect being the falling off of milk in one day from half a bucket to half a cupful. It is also stated that in some places the pulp of the berries is used for poisoning dogs, being mixed with food for the purpose." A case has been recorded of a European girl in India, who, having eaten the berries, became insensible and died. On the other hand, the best writers on the medical properties of plants make no allusion to the poisonous nature of the fruit of this tree; but as the *Melia* is so often planted in our southern cities, where it produces fruit in great abundance and is easily accessible to children and domestic animals, its real properties should be determined, and we shall be glad to record the results of any observations on this subject with which our correspondents and readers may favor us.

Melia Azedarach produces handsome brownish or reddish, rather coarse-fibred, wood, which is handsomely marked, and is often used for furniture in tropical countries.

A remarkable form of this tree is now often cultivated in the southern United States, especially in Texas, where it is supposed to have originated some twenty or thirty years ago. This is the variety *umbraculifera*, or, as it is commonly called, the Umbrella Tree, and its habit and peculiar mode of growth are well displayed in the illustration on page 95 of this issue, made from a photograph of a tree growing in a garden at Riverside, in southern California, for which we are indebted to Dr. James C. White, Boston, Massachusetts. We have been unable to find any account of the origin and history of this variety, which does not appear to be known beyond the limits of the United States, and we shall be very much obliged for any information relating to its history.

Vegetable Sculpture in China.

THE fantastic and grotesque training of shrubs and trees, which reached its acme among the Dutch, is usually attributed to the gardeners of Holland, but should not, I think, be placed wholly to their credit, for, as traders, the Dutch had visited China previous to the development of vegetable sculpture in Holland. These bold navigators noticed the curious-trained plants of that country, and, admiring these vegetable curiosities, introduced the fashion into their native land.

On my first visit to Canton in 1883 I was amused and instructed by some of the noted gardens of that city. The "Fa-ti," literally flower-place, is the most interesting of the gardens. This is an open space of ground on the west bank of the Pearl River, and has been occupied by Chinese nurserymen and florists for ages. It is surrounded with a closely packed mass of houses; the streets are only six feet wide, and their labyrinthine windings and intersections lead the stranger into a veritable Chinese puzzle. The alleys are covered with filth and garbage, and bad sewerage is evident, and they are crowded with jabbering half-naked Celestials and lazy mangy dogs.

An imposing arched structure of enameled porcelain in blue and yellow forms one of the entrances to the garden. Long pendent sign-boards hang on either side, on which a distracting combination of gilded strokes and dots are emblazoned on a red ground, and these set forth in flowery phrases the name of the garden and its proprietor, also the excellence of his merchandise and his incomparable honesty as a trader. Inside the entrance the garden opens up into a series of long parallel beds, divided by walks and margined with rows of green enameled pots containing a variety of trained shrubs and trees. The vegetable sculptor is conscious of the inadequacy of a mere shrub to give his picture the higher artistic tones of suggestion and expres-

sion. It does very well for the outline of his figure; but the heights of æsthetic extravagance are reached by using painted porcelain for the finer touches and features which cannot be made sufficiently realistic by green twigs alone.

Facing the entrance there were two *Ligustrum sinensis* dragons, about ten feet high, with painted porcelain eyes, scarlet sheet-tin jaws, serrated iron backs and shell-tipped claws. These monsters, which were crouching to spring upon the first St. George that entered, were really quite tame and were growing in eighteen-inch pots. There were men made of a species of *Ulmus*, and women of *Cerissa foetida*. The latter tottered on tiny clay-formed feet, the mark of the highest Celestial beauty, and had enameled heads and hands to match. The long sleeves and flowing robes of the high-caste Chinese dame were skillfully contrived with pliant branches. They all looked limp and languid and had the demure downcast look which is the regulation mien of the modest dwellers of the "inner chambers."

These artists select plants to suit their subjects, and there is certainly something appropriate in that aggressive prickly plant, *Euphorbia splendens*, to represent the tragic villain of the Chinese play. He does not resemble the cool, cynical black-mustached villain that parades his rascalities in our theatres. The Chinese villain is a demon, and looks it. The red and black lines painted on his face make him look very terrific. His *Euphorbia* body is girt about with edge tools, and he invariably carries a murderous-looking trident; his posture is the one of tragic menace, which he assumes before he turns a somersault and spears his rival in the final leap.

But I am inclined to think that the figure of the "foreign man" is the highest achievement in the garden. This effigy usually masquerades in a suit of *Atalantia buxifolia*, and occasionally *Zizyphus vulgaris*, and the Celestial artist who trained the twigs to form the "foreign devil" that honors the "City of Rams" with a visit, had a fund of sardonic humor that puts Cruikshank and Du Maurier in the shade. He stands erect on a brick pedestal, with one of his legs bent forward, à la militaire; his baggy trousers and long claw-hammer coat, the tails slightly curled up at the ends, are of the cut of a by-gone generation. His right arm is raised, and in his hand he flourishes a cane. His face is painted in a patchy fashion; he has mutton-chop whiskers, a delicately curled mustache and a wedge-shaped imperial. This is crowned with an old-fashioned plug-hat, which is slightly tilted back and bent over at an angle which gives the figure an air of conceited and comical audacity. The "foreign man" is not grown extensively, and he is not nearly so popular as the *Euphorbia* demon.

Boats called "sam-pans" are shaped in *Rubus rosæfolia*, and junks in *Photinia Japonica*. The clay figures that people these boats are cast in natural attitudes, and they have nothing in common with the perpendicular Shems and Hams associated with the Noah's arks of our earlier days. The postures and natural attitudes of the floating population are caught as if by a photographic snapshot. Men, women and children lounge, squat, gesture and mimic the playfulness of youth, the inertia of age, and the workaday life of manhood; all within the limits of a model two feet long.

Ficus retusa, the Banyan-tree of China, is peculiarly amenable in the hands of the trainers, and figures of the melancholy stork, the stately crane and the strutting peacock are cunningly fashioned with its branches. This tree and the *Ligustrum* are also used to mimic griffins and pagodas. The latter have small bells hung from the abutting angles of each story that tinkle melodiously to passing zephyrs. On models of fish the vegetable sculptor expends considerable labor, and, judging from their number and variety, they must be his favorite subject. All sorts of fish, from the festive shark to the untinned lobster, were sporting about among the pot-plants in lively profusion. These all had large round earthenware eyes with a comically cold and stony expression. The gardens also abound in a

collection of jars, vases, urns and other curiosities, not in blue china, but in green privet.

A frame-work of whole or split stems of *Bambusa flexuosa* is used for the larger figures, and the branches are tied sometimes with "rhea," the fibre of *Boehmeria nivea*, but more generally with "wong-ma," the fibre of the *Wong-ma-chuk*, or Yellow Bamboo. This last-named fibre is exceptionally strong and durable, and much superior to raffia, the cuticle of *Raphia rufta*, or the old-fashioned bast, the inner bark of *Paritium elatum*.

It is remarkable that the Chinese "fa-wong," or flower-king, as the gardener is called, does not care to part with his works of art. If you offer to buy, the price he quotes is almost prohibitive. The fact is, these plants are not grown for sale, but for hiring out as decorative plants at marriage ceremonies and for other festive occasions.

I have heard the Chinese described as stolid and unimaginative. This is a mistake. When the vegetable sculptor gives his genius rein he can ascend to heights of delirious conception, and he creates strange contorted monstrosities in moulded clay and green branches. The dragon and the griffin may be mythical monsters to us; to the Chinaman they are real, and their pictures have been handed down to him by the long line of ancestors he worships. But his fertile fancy conjures up animal horrors far exceeding the dragon and the griffin in the complicated anomalies of form and hideous expression. However ridiculous or anomalous foreigners may be inclined to consider these clever distortions of vegetable growth, one cannot fail to admire the skill and patience so conscientiously expended on the work, and to appreciate the imagination and genuine creative faculty which can conceive so clearly what is afterward carried out so successfully.

Manchester-by-the-Sea, Mass.

A. B. Westland.

Foreign Correspondence.

London Letter.

EDGEWORTHIA CHRYSANTHA is a handsome winter-flowering shrub which does not appear to be known in horticulture, although introduced from China by Fortune fifty years ago. In the temperate-house at Kew it is represented by a large bush five feet high, with numerous thick stems, branched above and bearing, in summer, terminal clusters of broad lanceolate green leaves, which fall off in the autumn, and are succeeded in February by terminal ball-like umbels of bright lemon-yellow *Daphne*-like fragrant flowers. These last several weeks, gradually changing color to creamy white; they are attractive to the eye throughout, and exhale a most alluring *Violet*-like odor. Planted out in a border of good soil this shrub has taken care of itself for many years, but it has never flowered so freely as this year. It may be propagated either by division or from cuttings. There is a figure of it, a very poor one, in *Lindley's Botanical Register*, 1847, t. 48, where Fortune states that it flowers in Chusan in July, and that in order to induce it to flower the Chinese bend the stems round so as to form a loop, but this has not been found necessary at Kew. In the *Botanical Magazine*, t. 7180, there is a figure of *E. Gardneri*, prepared from a plant flowered at Kew in 1891, and which had been raised from seeds sent from the Himalayas. Sir Joseph Hooker considers this *Edgeworthia* and *E. chrysantha* to be specifically identical, but for garden purposes at any rate they must be kept distinct, *E. Gardneri* having thin hairy stems and smaller and less silky leaves than the Chinese plant, from which it also differs in not losing its leaves during winter. *E. chrysantha* is a handsome shrub for the greenhouse, but, so far as I know *E. Gardneri*, I should scarcely recommend it to the notice of horticulturists.

SENECIO GHIESBREGHTII, although in cultivation for many years and long a conspicuous object in the temperate-house at Kew, had not received the distinction of a first-class certificate until last Tuesday, when it was shown by Sir

Trevor Lawrence. It has thick fleshy purplish stems, which at Kew grow to a height of six or eight feet and bear large deep green leaves a foot long and nine inches wide. The flowers, which are developed in winter and remain showy for several weeks, are in a huge terminal corymb, from a foot to eighteen inches across; and of a bright yellow color. At Kew, *S. Griesbreghtii* is planted out in groups, which make imposing pictures of immense leaves and gigantic heads of flowers at this time. Last year it was grown in pots for the conservatory and formed handsome specimens two feet high. It is also a good plant to use for subtropical effects in summer, and is a first-class garden-plant. It is a native of Mexico and is also called *S. grandifolius*.

AMYGDALUS PERSICA MAGNIFICA is a new variety of Peach which Mr. J. Veitch has introduced from Japan, and which is certain to become a great favorite. It is quite hardy, and the specimens shown were long shoots clothed with flowers, which had been lifted from the open air at Coombe Wood in the middle of February. The flowers were exactly like those of the doubled-flowered Peach in size and form, but in color they were of the clearest carmine-crimson, bright and beautiful. For a supply of flowers in the early spring, or to force for use in midwinter, or even as a tree or shrub for the conservatory, this new arrival from Japan has a special value. It was shown in company with the snow-white-flowered *Prunus Davidiana* and the Lilac-like *Daphne Genkwa*.

PRUNUS DAVIDIANA has been in flower here since the end of January. Although introduced to France by the Abbé David twenty years ago, this plant was not known in English gardens until Messrs. Veitch showed it in flower a year or two ago, but it has only to be seen now to find universal favor. We have a Japanese garden here, in which a tree of this snow-white Peach is now a beautiful picture, its crowd of erect branches being wands of white fully two feet long. It was in full beauty before the Almond-buds had even moved. The variety called *ruora* is not nearly so effective. Messrs. J. Veitch & Sons exhibited a beautiful group of bush-plants of the white form this week. We are indebted to China and Japan for many first-rate plants of the *Prunus* family, but this *P. Davidiana*, in its elegance and purity, is, I think, the most charming of all.

CLEMATIS BALEARICA, generally considered to be a form of *C. cirrhosa*, but much superior to the ordinary garden representative of that species, is a plant of considerable value, as it is as hardy as the hardiest, is evergreen, with leaves suggesting those of *Vitis heterophylla*, and it grows rampantly in ordinary garden-soil. In addition to all this, it produces its flowers in February, and they are not affected by a few degrees of frost. They are borne three or four together in the axils of the leaves, singly on stalks nearly two inches long, nodding, and colored creamy yellow outside, with spots of dull red inside the petals, which are ovate and an inch long. A mass of it clustering about a tall stout stake is now an attraction among the collection of hardy *Clematis* at Kew. *C. cirrhosa* is a native of Minorca; the history of the form called *Balearica* is unknown to me.

DAPHNE MEZEREUM, var. *GRANDIFLORUM*, is much superior to the type as regards the size and color of the flowers, which, in the variety, are nearly an inch in diameter and of a rich crimson-purple color. So far as effect goes, the size is of less importance than the color. I read lately in *GARDEN AND FOREST* that *D. Mezereum* is now naturalized in some of the states. It is one of those shrubs of which we cannot easily have too much. At Kew it is largely used on account of its early-flowering habit, and this winter it has been exceptionally beautiful. Large beds of the purple form are a conspicuous feature on a large lawn in one part of the garden, and the white variety is almost as effectively employed. During the summer the *Daphnes* have various species of *Lilium* as companions.

SPHERALCEA ABUTILOIDES is worth growing for the greenhouse on account of its axillary racemes of rosy-mauve

Malva-like flowers, nearly two inches across, which are developed in February. It was introduced in 1725 from the Bahamas, but had long since disappeared from gardens, until re-introduced to Kew by Baron Eggers a few years ago. Here it is grown along with greenhouse *Abutilons* and forms a nice little pot-plant two feet high, with silky green leaves. With a little management it can be had in flower at almost any time. *S. umbellata*, better known as *Malva umbellata*, is another useful old plant for the greenhouse, which, however, is rarely seen in gardens. A species, said to have been found by Nuttall on the banks of rivulets east of the Walla-Walla, in north-west America, and introduced to Kew in 1863, is not known to be in cultivation here, though its picture represents it as a handsome flowering shrub.

NEW ORCHIDS.—The following were the most noteworthy Orchids shown at the last meeting of the Royal Horticultural Society:

Lælio-Cattleya Hon. Mrs. Astor. A beautiful hybrid between *L. xanthina* and *C. Gaskelliana*. The flowers are of medium size, well formed and colored buff-yellow, with an orange-yellow lip, the front lobe colored magenta-purple, elegantly crisped and wavy. It was exhibited by Messrs. F. Sander & Co. and obtained a first-class certificate.

Lælio-Cattleya Tydea is a hybrid between *L. pumila* and *C. Trianae*. It shows the characters of both parents, is not unlike a form of *C. Percivaliana*, and its colors are rosy-purple, with a dark crimson labellum. It was shown by Messrs. J. Veitch & Sons and obtained an award of merit.

Pleurothallis Roezlii was shown by Mr. R. J. Measures and obtained a botanical certificate. The equally large-flowered and remarkable *P. scapha* is now in flower at Kew.

Calanthe Baron Schroeder is a hybrid between *C. vestita oculata* and *C. Regnieri*, and superior to both. Two spikes were exhibited from Baron Schroeder's collection, very strong, bearing numerous flowers of large size and of a rose-crimson color, the lip maroon. It obtained a first-class certificate.

Sophranitis grandiflora was represented in a specimen bearing over fifty beautiful scarlet flowers, shown by Sir Trevor Lawrence, who also sent several new plants which were awarded botanical certificates, among them being a pretty little yellow-tailed *Masdevallia* named *picturata*. He also showed *Bulbophyllum mandibulare*, which is remarkable in having purplish flowers nearly two inches across, with a large, fleshy, tongue-like labellum. It was discovered in Borneo by Mr. Burbidge, and has lately been imported by Messrs. F. Sander & Co.

Cymbidium eburneo-Lowianum was shown by Messrs. Veitch, who raised this striking hybrid a year ago. It bore several strong spikes of yellowish rose-tinted flowers. The same exhibitors sent a plant of their beautiful hybrid *Phalænopsis* F. L. Ames, which I consider the best hybrid in this genus yet raised.

Phalænopsis Youngii is a supposed natural hybrid between *P. Aphrodite*, var. *Dayana*, and *P. Schilleriana*, but bears characters rather suggestive of *P. Stuartiana*, the flowers having white sepals and petals spotted with brown and tinged with rose, the lip white, barred and spotted with crimson. It received an award of merit.

Cattleya Percivaliana, bearing thirty beautiful flowers, was shown by Messrs. H. Low & Co., who also exhibited fine examples of *Phalænopsis Stuartiana* and *Schilleriana*. A plant of the rare *Angræcum Chailluanum* was also shown in flower.

A CORRECTION.—In my note on Richard Spruce, the botanical collector, I inadvertently stated that Humboldt took an interest in him. This was obviously erroneous. I ought to have said Bentham, who took considerable interest in Spruce's collections, and undertook to name and distribute them as they arrived in England. There is a very interesting obituary notice of Spruce from the pen of Mr. A. R. Wallace in *Nature* of January 31st.

W. Watson.

Berlin Letter.

ON the summit of the Kreuzberg, at Berlin, within the boundaries of the new Victoria Park, are two large Hackberry-trees of the American species *Celtis occidentalis*, which date from the beginning of the century, and are grouped with widely spreading *Acacias* of like age. In the course of years the roots of the *Celtis*-trees had been laid bare to a considerable extent by the action of high winds blowing over the hill-top. They have been lately carefully covered by spreading garden-mould over them. As the species is rare in Germany, and as these two specimens are in a way historic, having been planted by Lenné at the dedication of a colossal statue which commemorates the delivery of the Fatherland from the domination of Napoleon, it seemed to me that they should be rescued from impending destruction. One species of *Celtis*, *C. australis*, which inhabits the south of Europe, is called, in German, Zürgel. Misled by similarity of sound, the Berlin

here with great vigor and promises to be the best of conifers both in elegance of appearance and in the rich green color of its foliage. It has proved perfectly hardy, while *Pinus Sabiniana* succumbed to the unusual severity of the last winter, and *Pinus Coulteri*, although it endures the climate, develops but slowly.

The Big Trees of California, which had been apparently acclimated in the vicinity of Berlin, were also unable to resist the extreme severity of last winter. There were specimens, thirty to forty feet high, which were in a very flourishing condition, but they have met with the same fate which befell the Cedars of Lebanon a generation or so ago. If there are any Sequoias still living, it is due to the fact that the snow protected some that were very young, or because a few of large growth were specially protected. One specimen, however, has survived without special care, and did not lose a leaf. The people of Berlin are reluctant to abandon the cultivation of a tree of such beauty and



Fig. 20.—An Umbrella Tree, *Melia Azedarach*, var. *umbraculifera*, in Riverside, California.—See page 93.

newspapers reported that Zirbel nuts (*Pinus Cembra*) had ripened in large quantities on the Kreuzberg, and that the children ate them with avidity. Of course, this mountain conifer is not to be found in Berlin. The fact is that the boys of Prussia are quite indifferent to the distinction between the *Urticaceæ* and *Coniferae*, and, being a trifle Spartan in their appetites, had amused themselves by gathering a fruit that had no connection whatever with the Pine-nuts, and were no other than the little berries of the Hackberry, the flesh of which is so thin that it is scarcely counted among edible fruits.

The cones of *Pinus Jeffreyi* matured for the first time last autumn, in the vicinity of Berlin, on a tree at Schaffenberg, about twenty-five feet in height, which had produced nothing but bright orange-colored male flowers for several years previously. The cone is quite large and might be mistaken for that of *Pinus Canariensis*, which, like it, is characterized by leaves in clusters of threes. *P. Jeffreyi* grows

interest, and as a matter of fact such excessively cold weather occurs but two or three times in a century, and therefore the trees will be planted again. Nevertheless, it seems to be demonstrated that in Brandenburg the Sequoia can never really become a big tree. Young saplings of Redwood, although they seem more delicate, withstood the winter at Scharfenberg, but they were protected by a covering of dead leaves.

Picea Omorica, of Servia, is still rare here, and no cultivated trees, so far as I know, have attained anything like the proportions which they reach in their natural home. However, with that tendency to variability which conifers always show in cultivated seedlings, some of these have developed into remarkable forms, which depart widely from the type. In the palace garden at Potsdam I recently observed one of these young Spruces with such drooping branches that it promised to assume a shape quite singular in this race generally characterized by upright growth.

This unlooked-for novelty is in the charge of Mr. Koopman, of the Gärtner Lehranstalt.

There is at Scharfenberg a magnificent specimen of *Celastrus articulatus*, planted ten years ago, which came there named *Celastrus paniculatus*. This Japanese creeper has grown wonderfully, having reached an immense height and entirely covered a tower which flanks the building. The plant flowers luxuriantly, but the flowers are all feminine, so that its most ornamental feature, the rich orange tint of its fruit, is wanting. Up to the present time all efforts to obtain a male plant have been unsuccessful. Are plants of both sexes to be had in America? [Yes, in great numbers.—Ed.]

Berlin.

C. Bollé.

Cultural Department.

Annual Flowers from Seed.—IV.

PANSIES are mostly treated as annuals in gardens, but they are so generally grown by commercial florists that owners of gardens look to them for their annual spring supplies. They are, in this climate, best sown in August or September and wintered over in a cold frame. There is, however, much satisfaction in growing one's own seedlings, even if delayed as late as this time, provided a rich cool piece of ground can be used, moderately shaded, as on the north of a picket-fence. The flowers will be small in summer, which, however, is a venial fault, for the Pansy in late years has been "improved" too much in the matter of size. The greatest development has been reached in the Giant Trimardeau, whose immense thin petals and washy colors seem to make these among the least pleasing of garden flowers. One cannot go amiss among the other strains offered by the florists, although most of them need careful weeding out to secure only plants with the pure deep colors which have always endeared the Pansy to flower lovers. But for sweet flowers, with perfect purity of coloring, there should be tried the tufted Pansies, or hybrid *Violas*, names by which they are known in England, or as now offered by our seedsmen, Sweet-scented Pansies. These charming plants are crosses between the modern Pansies and some species of alpine *Violas*. As plants they vary, but are mostly of a somewhat tufted habit, with rather thinner stems than Pansies, and they usually produce many basal, or, rather, root breaks, from which they rapidly increase. The flowers are generally rather small, in good forms scarcely two inches broad, often self-colored, or possibly with a delicate ground color and markings or shadings of another color. Usually they are delightfully fragrant, with a fresh delicate *Viola* odor. They flower very freely at all times if not allowed to become dry at the roots. The plants are more hardy than Pansies, though in this climate care must be taken that they are not thrown out of the ground during the frequent thaws occurring in our winters.

The principal objection to Poppies which occurs to me is the fact that in a small garden one can only devote an absurdly small space to flowers of such beauty. The typical scarlet kinds must be grown with caution, as they are eye-filling to a degree which blinds one to the other occupants of the borders, but the white-eyed Shirley Poppies are the daintiest poems in colors, and should be planted in every garden. They are fragile to a degree, and the plants are short-lived, but their glories are such as will linger in the memory long after they have departed from the borders. It is not always the friends who are longest in evidence from whom we gain the most pleasure. The double Poppies, while not so airy, are yet handsome flowers and more enduring. But the most satisfactory variety in all respects for a small garden is the Iceland Poppy in its various shades of white, yellow and deep reddish-orange. These charming little plants make dense low clumps of foliage; they are easily grown from seed, which may be sown now, as one sows other Poppies, by mixing the seed with soil and scattering it broadcast. The plants will flower this season, and, being perfectly hardy, will, next year, be in fine condition to throw up numerous flower-stalks as soon as the snow is fairly melted. They continue flowering for a long time if the seeds are not allowed to form. It is usually necessary to thin out the young plants so as to allow room for the proper development of a required number.

It is not customary to class *Roses* among annuals, but we have now a new race of the *Polyantha* or many-flowered *Roses*, which will flower in ninety days after seed-sowing. The seed are the size of ordinary *Rose*-seed and germinate readily at a moderate temperature. The young plants grow vigorously,

and may soon be transplanted into the border. In the course of the season they make thrifty bushes one to two feet high, and usually with reddish stems and bright foliage. The numerous flowers are sometimes single, and in some cases are dainty little perfectly double ones. The colors are various tints of red, shading to pure white. They give successive crops during the season, and the plants, which are hardy and perennial, in the late year are attractive with their crop of bright scarlet hips.

Salvia splendens is a universally appreciated flower of great value in the garden, and is easily grown from spring-planted seeds, which germinate readily and strongly. There have been several varieties of this *Salvia* offered, but none have proved better than the type. The blue *Salvia*, *S. patens*, is a charming flower of a most beautiful hue, but the plant is a straggling grower, and is only to be recommended to those who wish to grow the more uncommon flowers having some especial value.

It requires but a glance at any current seed-catalogue to assure one that Sweet Peas are at present the most popular annuals in cultivation. New varieties, always named, are being added to the list each year, and while there is a tendency to crowd the list with novelties, it may be said that among the newer flowers of Eckford and other specialists there are many distinct and beautiful kinds which are a real improvement in color and size over the old favorites. The cultivation of Sweet Peas is very simple, provided the sowing is made as early as the ground can be turned in the spring, though it is better to have the soil prepared by thorough deep working and manuring during the previous fall. Trenches six inches deep should be made, and the seed sown thinly and covered with half an inch to one inch of soil. As the plants gain in height the soil may be hoed up to the plants until the ridge is nearly filled. They need a supply of moisture, and it is always well to leave a depression of the ground over the roots. Sweet Peas are divided into two general classes—the white-seeded and the black-seeded. The latter have feeble germinating powers, and care should be taken in planting to cover them lightly, only enough to envelop them in a close moist covering of light earth. Sweet Peas are readily moved when young, and if the garden is wet and cold progress may be made by planting the seed singly in thumb-pots, which should be plunged in light earth in a warm sheltered spot. Here the seeds will germinate quickly and the roots run through the drainage-holes. When the permanent quarters are ready the plants may be lifted carefully and transplanted with entire safety after breaking off the pots. As to varieties, it will serve to indicate only a few of the most desirable colors. In white Peas, Emily Henderson is valuable for purity of color and freedom of flower. These are also of the largest size, of good shape and substance. I have seen stems of these bearing five and six flowers. This is a white-seeded variety. Of the black-seeded sorts bearing white flowers, Mrs. Sankey seems the best variety. For pink Peas, Blanche Ferry leaves little to be desired. Cardinal is the brightest scarlet, and is a large flower. A good yellow Pea is desirable, and in Mrs. Eckford is promised a deeper color than before secured. This I have not yet grown. The darker Peas I know nothing about, as I do not fancy this class, and have not given them a trial.

Elizabeth, N. J.

J. N. Gerard.

Alpine Poppies.

THE Iceland Poppy is now familiar to almost every one, and during recent years our gardens have been enriched with varieties which are double or novel in their color. Our Swiss Poppy seems quite as interesting, and it is not only one of the best among our white alpine flowers, but one of the most freely flowering of all plants. It forms a dense turf-like mass of fine-cut bluish green and generally glabrous leaves. The stems in the Alps never exceed five inches in height, but the flowers are large, the four petals being ample, crimped and of a beautiful white with a silky lustre. The numerous colored anthers at the centre make an interesting contrast with the glittering white of the corolla. The flowers are very numerous, and I once counted about eighty on a single plant on our rockery here. The flowers appear from May to the month of October. In its native mountains there are often found variations from the type in form and color. One of these, *Papaver Rheticum*, has petals of orange-yellow, with villous foliage, and the divisions of the leaves are broader. It grows only in the Engadine Alps. *P. Burseri* is a white form of this species, which is found in the Tyrol. *P. Pirenaicum* is another nearly allied species with leaves, stems and calyx very villous and yellow flowers. All these plants are polymorphic, and have given many horticultural varieties with red, pink, pale rose, violet, whitish and yellowish tints. These Poppies of the Alps

and Pyrenees are very easy to cultivate, and they grow quickly if sown in spring. They will flower the same year, and can be planted either in the rockery or the herbaceous border. They delight in a light sandy soil and a half-shaded situation. When planted in rich soil they lose their character and vary in form, color and shape.

Some eight years ago I received from the late John Ball a valuable Poppy which grows in the Atlas Mountains among the rocks just as ours do in the Alps. It is the African form of *P. rupifragum*, and was described by Ball as *P. Atlanticum*. I do not know of another plant which blooms more richly and abundantly. It is a brick-red and very delicate in form, borne on long graceful stems, and it flowers from May until the heavy frosts of November and December. It is one of the choice plants for rockeries and wild gardens.

Geneva, Switzerland.

H. Correvon.

New and Rare Plants at Baden-Baden.

PAPAVER GLAUCUM, introduced by me from Asia Minor, has rapidly found favor with the public; it is a hardy annual, with large and numerous flowers of deep dazzling red. It can be had in flower from April to November, and when potted will make the greenhouse gay for a month longer.

Verbascum pannosum, from Bulgaria, *V. Wiedemannianum* and *V. xanthophoeniceum* are also desirable plants; the first is a giant species, much like *V. Olympicum*, but the spikes are thicker and denser, and the yellow flowers much bigger. During the one or two years before it flowers it is an ornament of the garden on account of its large tufts of woolly leaves, which are nearly paper-white. The last-named two are stronger growers and have finer flowers than *V. phoeniceum*. They should be in groups close together.

Delphinium Armeniacum is an annual in the shape of *D. Ajacis*, but the spikes are denser and the color of the flowers is a strikingly brilliant blue.

This year *Artemisia squamata*, a beautiful umbelliferous plant from Asia Minor, will be sent out. It resembles in shape *Nigella Damascena*; the leaves are finely cut and the creamy white flowers two inches across, which appear in great abundance, are sure to find admirers. The outer circle of florets are broad-shaped, and thus the flower seems to be substantial and elegant, too.

Silene swertiaefolia is another novelty to come out this season. It flowers from July onward to October, and the much-divided flower-stalks show numerous satiny white flowers, beautifully shaped.

Kniphofia longicollis seems to be another novelty of promise. Many plants of it are flowering freely just now, but I cannot judge as yet whether this is its regular time, or whether this late blooming is caused by the late dry season. The spikes are elegant, and the flowers vary from sulphur to bright yellow.

For American summers *Gazania nivea* will be a welcome plant; it must be wintered in a greenhouse, but will make a splendid ornament in the right place. The flowers are large, pure white, with a yellow disk. There are numerous novelties in bulbous plants, but these I wish to see again before judging them definitely.

Baden-Baden.

Max Leichtlin.

Chrysanthemums.

IT is now time for the distribution of new Chrysanthemums, and these require to be made the most of from now until planting-time. Many of the plants will come with cuttings on them large enough to be taken off, and this may be done after a few days when the plants have recovered a little. To grow specimen plants we take out the tips only, which induces a good bushy growth above the ground-level. If the plants are to be grown for specimen blooms we cut low and box the plants in good rich loam, hoping to get a plentiful growth of suckers, as these make the very best cuttings. Varieties which do not sucker freely may be cut to leaf-eyes, with the prospect of getting fair plants by the 1st of June.

My stock plants for blooms are frozen now, but early in March they will be moved into slightly warmer quarters, and started growing slowly, with every prospect of an abundant supply of cuttings before the 1st of May. When this is possible, a period of rest should be given stock plants, thus adding new life and vigor. The best time to put in cuttings depends upon whether the flowers are intended for exhibition or for home-decoration. For exhibition, most growers agree that about the 10th of May is the best time to start the cuttings, and for planting, about the 20th of June. The quantity of cuttings will depend upon the space to be occupied, and ten

inches apart is not too much to allow. For general decorative purposes later and closer planting may be practiced, and very fair blooms may be grown if the planting is done as late as the 20th of July. It sometimes happens, as in my case, that the date of planting has to be reckoned by the amount of head-room that can be allowed. For early planting at least six feet of head-room will be needed, and for later planting correspondingly less. With the exception of Ivory, W. H. Lincoln, Cullingfordii, Ada Spaulding, and probably a few others, which require a longer season to mature, it is the general opinion that for private as well as for commercial purposes medium early or even late planting is best. This admits of closer planting, and, what is still more important, fewer abnormally early crowns are developed, and these seldom produce good flowers. With the expert who fully understands the proper timing and taking of the buds of the varieties he grows, it is different. When he knows a bud is too early he has the alternative of taking a terminal, which is always done.

There is an impression, often expressed lately, that there are too many novelties. Not many years ago a friend of mine, an amateur grower, cultivated all American novelties, and some European ones as well. But the task is too great for him now, and he is not able even to keep any record of them. And yet it would be an easy matter to grow all the really good novelties we get, and all the remarkable varieties of a season could be counted on one's fingers. There is sufficient material in the National Chrysanthemum Society of America for the formation of a proper tribunal before which all new varieties should go. As it is, American varieties are pre-eminent the world over. While our plan of cultivation is good, and on the whole best suited to our environment, our English friends excel us in the cultivation of many Chrysanthemums, and this is no less true of varieties of American origin. I am not aware that the American bench system has been practiced to any extent in England, but judging by the comparison between bench and pot cultivation in this country, I should think they would succeed even better than they now do if this method were adopted. Changes come slowly.

Wellesley, Mass.

T. D. Hatfield.

Maranta Lageriana.—This plant has been in the market for two or three years, and promises to be a useful addition to this beautiful family. Its growth is moderate, and its nearly ovate leaves are bronzy green and reddish beneath. It has a compact habit, and soon makes a pretty little specimen. So far it has been tried only for indoor purposes, and possibly it will not prove as enduring as *Calathea zebrina* and one or two other species that are often used for outdoor decoration in summer.

Adiantum cuneatum variegatum.—Variegated seedlings of *Adiantum cuneatum* are not uncommon, but they usually have little value. This one, which has been considered good enough to have a name of its own, is, perhaps, the best of the kind yet sent out, though, in my estimation, none of them are as beautiful as the type. In *A. cuneatum variegatum* the pinnæ are splashed and marked with white, and the characteristic is so well fixed that it comes true from seed, and is thus readily propagated. Variations from normal form or color always find some market as curiosities, and as variegated Ferns are comparatively few, there may be an opening for this one, though, where space is limited, it may well be omitted in favor of some of the other forms of *A. cuneatum*, of which many have appeared. Some of these are crested, some dwarf, some have much-divided pinnæ, after the manner of *A. fissum*, and one seedling has spirally contorted fronds.

Holmesburg, Pa.

W. H. Taplin.

Dendrobium Phalaenopsis Schroederianum.—I have spoken of this valuable new plant in vol. vi., p. 467, of GARDEN AND FOREST, but I am prompted to say more of it now that the plants are in full bloom. This is not the usual period of flowering. Established plants generally flower in the dull autumn months and are very useful then, but those now in bloom were obtained last June as dried imported plants, and consequently started late. They all grew well, and every plant is now showing flowers. There is a wide range of color in the plants already flowered, some being dark and others pure white, with rose shadings over the petals and lip. The paler forms are certainly the more pleasing and seem to predominate. When this *Dendrobium* becomes fully established and makes a growth equal to that of the imported plants, we shall be surprised at the number of flowers to each spray. Full exposure to the sun in winter is necessary to mature the growth, especially where this has been made late, and also a position in the

warmest house, with a minimum of sixty degrees at night. It is essentially a warm-house plant. Even when in bloom it does not do to move the plants to a cooler temperature, as the flowers soon spot and quickly decay from damp. Another point worth noting is that a very small portion of potting material is sufficient about the roots, at least until the plants become well established. We pot them in shallow pans with holes in the sides, and suspend them close to the roof glass. Thrips and red spider are very partial to the young shoots, but in the growing season frequent spraying will keep these pests in check and benefit the plants also.

South Lancaster, Mass.

E. O. O.

Peas.—Just as soon as the soil warms a little, a sowing of Peas should be made. The wrinkled kinds are always liable to be chilled during germination, but their superior table qualities are very much in their favor. American Wonder is the earliest, and for private, and especially suburban, gardens, is very much to be commended, since it can be planted as closely as two feet, and needs no brushing. The Chelsea, another dwarf early wrinkled variety, has proved a close competitor, being about two days behind American Wonder. Although the pods are not quite so large, it is a heavier cropper, and, apparently, is hardier. Alaska is a blue seed early Pea, growing three feet high, and is a trifle superior in table qualities to the O'Rourke type. It ripens very evenly, and, although cropping heavily, does not give more than two pickings. After the earliest brush varieties we sow only wrinkled kinds, quality being an essential always. Alpha is one of the best early wrinkled sorts, and follows closely in succession. This variety grows to a height of three feet. Admiral, which reaches a foot higher, is a very heavy and continuous cropper, and succeeds Alpha. Heroine, three and a half feet tall, is the next in succession, and is probably the largest-podded and the best table variety grown. It crops for a long time, but not heavily at any time. G. F. Wilson, of the same height, and coming into bearing at the same time, was one of the best Peas grown here last year. The pods are not extra-large, but the yield is heavy and the flavor is superior. Telephone and Champion of England ripen in the order named.

Worcester, Mass.

H.

Correspondence.

The Quality of Modern Process Maple-sugar.

To the Editor of GARDEN AND FOREST:

Sir,—In GARDEN AND FOREST of May 3d, 1893, attention is drawn to the fact that much of the maple-sugar being made now is over-refined at the expense of its peculiar but agreeable flavor.

Born and reared within the shadow of the New England Sugar-maple, I am familiar with the orchard and camp and the delicious maple-sugar as produced therein fifteen or twenty years ago. Times have changed; the old open kettle has been supplanted by the modern evaporator and clarifying process, so that the sugar of to-day is as bleached out as the most fastidious could desire. It is evident, also, that with this new process the sugar has lost its savor. This may be demonstrated in several ways. Those familiar with the maple syrup or sugar of a few years ago were accustomed to a flavor peculiar to the Maple only, so that both the syrup and the sugar were highly relished and sought after. To-day, the so-called best syrup is thin and white, and the characteristic maple flavor is hardly perceptible; the quality is lacking, as based on previous standards, which, to be sure, may be inferior ones. However, for one, I agree with your correspondent, F. E. C., when he says, "In the case of the maple, this flavor is good; it is what has given maple-sugar its value over cane-sugar." It does seem singular that the market should prefer the sugar on the basis of color rather than quality.

In 1892 I purchased five gallons of maple-syrup of an Indiana sugar-maker. It was made in the open kettle, and every person who tasted any of the syrup made from it considered it unusually fine in flavor and quality. It was of good color, heavy, and after being placed in fruit-jars a mass of crystals accumulated on the sides of the jars. During the following season my friend purchased a modern evaporator, and started in with a new up-to-date equipment. Later he wrote to me that he was making perfect syrup, so I ordered five gallons of the 1893 crop. Upon its receipt I found a thin, light-colored syrup, decidedly lacking in flavor in comparison with the choice product of the year before. So great was my disappointment in its quality that I found little pleasure in its use, lacking as it did the distinctive qualities of maple-syrup.

Having some of the 1892 crop, a comparison was made in the station laboratory, which I herewith give:

	1892.	1893.
Specific gravity,	1.366 per cent.	1.302 per cent.
Polarization direct,	57.6 " "	57 " "
Polarization after inversion,	22.2 " "	20.2 " "
Sucrose,	60 " "	58 " "

The 1892 lot was viscid, that for 1893 was not, neither were crystals noticeable on the vessel containing the latter. The 1892 crop deposited malate of lime in fruit-jars, after standing, while the 1893 crop did not. Both were standard syrups. The flavor had been materially diminished by the more modern method of treatment, and in this flavor lies the real delicacy of maple syrup or sugar to many.

Just what the source of this flavor is, I cannot say. In Bulletin 13, Division of Chemistry, United States Department of Agriculture, on "Foods and Food Adulterants," Professor H. A. Huston says: "The Price of maple-sugar, as is well known, is out of all proportion to the saccharine matter which it contains, and is due to its peculiar and pleasant taste, derived presumably from some ethereal matter exuded with the sap. The nature of this substance has not, to my knowledge, been definitely determined. It is not wholly volatile, since it remains in the sugar and molasses after they have been kept for a long time at a high temperature during the process of concentration. Nevertheless, a distinctly agreeable odor marks the process of maple-sugar evaporation, as every one can attest who has visited the primitive sugar factories which are operated in the maple-sugar industry."

In a visit to the cane-sugar plantations of Louisiana in the fall of 1892, I noticed that the open-pan molasses was much superior to the molasses from the centrifugal, both in flavor and quality. Dr. Stubbs, in the Government report above referred to, says: "Three kinds of molasses made from sugar-cane are sold on the New Orleans market. The first of these is the open-kettle sugar molasses, usually of fine color and flavor and rich in sugar. The second and rapidly increasing kind is centrifugal molasses. This product is much inferior in quality to the open-kettle molasses."

It is, therefore, evident that, while the standard of purity is not reduced below a reasonable degree, the subtle and indefinable flavor of both maple and cane-sugar syrups is injured by the improved process of manufacture, so that they are both inferior in this regard to the open-kettle product. A former student of this university last spring sent me a jug of open-kettle maple-syrup of a delicate flavor, which it would seem difficult to excel, and yet when he sent the syrup he felt called upon to apologize for the fact that it was made in the old-fashioned way. Are light-colored, flavorless sugars and syrups preferred because they are fashionable, or is our sense of taste becoming more refined? And yet, as F. E. C. says: "If sugar is wanted that is simply sweet, we can get it much cheaper from cane or beets."

Agricultural Experiment Station, Indiana.

C. S. Plumb.

Apple-scab in Canada.

To the Editor of GARDEN AND FOREST:

Sir,—Fifteen or twenty years ago the apples grown in the vicinity of Montreal were widely known for their fine appearance and quality, and always commanded a little better price than fruit grown elsewhere. In recent years the enormous quantities of apples shipped to Montreal from Ontario and the state of New York have greatly reduced the prices of the locally grown apples, although when of good quality the home fruit is still preferred. The Fameuse, or Snow, apple has been the favorite both for shipment and home consumption.

Competition, however, has not lately been the chief trouble with fruit-growing about Montreal. A portion of the fruit has always been affected by the fungus known among orchardists as the "scab" or "spot," and by botanists as *Fusicladium dendriticum*, but the percentage of injured fruit rarely ran as high as fifty per cent., and was often quite small. Within a few years the fungus has become so much more abundant as to discourage apple-growers here, as it has in so many other places. Sometimes not five per cent. of the apples can be called first-class, where once there were rarely more than ten per cent. to be placed among the second and third class. The affected leaves become sickly and starved, and the trees lose much of their vigor.

After waiting for some years in the vain hope that the disease would become less harmful, the Canadian apple-growers now realize that their only hope lies in efficient treatment with fungicides. Many growers about Montreal have been using

remedies during the past season or two, but, so far, with rather unsatisfactory results. In some instances an improvement has been noted, in others but little advantage has resulted in the quality of fruit, although the foliage has been more vigorous. These seeming failures should not discourage the growers. It will require both patience and experience to discover the best fungicide and to apply it most effectively. Those who have read the careful experiments conducted at the Cornell Experiment Station by Professor Lodeman must feel encouraged at the prospects of suppressing this pest.

The fruit of certain varieties of Apples seems to be affected by the scab but little, or not at all, and for this reason some orchardists in the Province of Quebec have been selecting these varieties for recent planting. Such apples as Fameuse and St. Lawrence are among those worst afflicted; Walbridge and Wealthy are less so; Red Astrachan and Pewaukee keep comparatively clear and salable. The fruit of Tetofsky, Charlottenthaler (Yellow Transparent), Duchess, Alexander and Golden Russet remains clear, but in some cases the foliage is more or less affected. Pears, such as Flemish Beauty, are also liable to serious damage by the scab. It is probably not safe to plant any variety with the idea that it will always be exempt from injury, and certainly where the foliage is affected the fungicides should be applied. As most of the older orchards about Montreal are composed of the favorite Fameuse, one of the kinds most affected, the injuries by the fungus have caused greater loss and discouragement here than in some other districts where other varieties predominate.

Arnold Arboretum.

J. G. Jack.

Recent Publications.

Japanese Plums in the United States.

In 1870 a Mr. Hough, of Vacaville, California, secured through Mr. Bridges, the United States Consul in Japan, several Plum-trees from that country, and the trees, having passed into the possession of the late John Kelsey, of Berkeley, first ripened fruit in 1876. This variety of Plum, which was afterward named for Mr. Kelsey, was soon found by California growers to be very valuable for general cultivation, and it was largely propagated some ten years ago. Since then Mr. Luther Burbank and others have imported several varieties from Japan, and, contrary to general expectation, a considerable portion of them have been found adapted to our northern states. It is not to be wondered at, therefore, that during the past four or five years these plums have attracted more attention than any other fruit of recent introduction. The best of them will compare well in quality with our own plums, and while many of them are inferior in this respect to our best fruit of the *Domestica* type, they have, among other desirable characteristics, vigor and productiveness, freedom from disease, great beauty and long-keeping qualities.

Bulletin 62 of the Cornell University Experiment Station is devoted to the *Japanese Plums in North America*, and Professor Bailey, who has prepared it, has made a most interesting monograph, in which he discusses the origin and botanical position of the plants, and then, after attempting a provisional classification of them, he describes the varieties which are already known here. We have only space for a brief summary of this paper, and recommend all those who are interested in these new fruits to secure the bulletin as the most complete statement yet published of what is absolutely known, and what may reasonably be expected of these new plums.

The so-called Japanese Plum belongs to the species *Prunus triflora*, which is unknown in a wild state, but which is supposed to be a native of China. About thirty varieties have been imported and disseminated through different sections of the United States. The fruit is distinguished from that of the common *Domestica* type by being generally more pointed or heart-shaped; it has a deep suture upon one side, a pit which is generally less winged, and flesh which keeps longer after it is ripe. The trees differ botanically from our ordinary cultivated Plums in bearing, as a rule, three or four winter buds at a joint, instead of one, in light-colored rough bark; the flowers are usually in twos or threes; the leaves long-obovate or ellip-

tical and finely serrate. An important fact is that they are quite closely allied in their botanical characters to some types of our native Plums. While importations from Japan have been freely made, there are probably many more good varieties in that country which have not yet reached America, and we must look for permanent progress in the future mainly to seedlings raised in America. The imported plants differ among themselves greatly in hardiness—some of them, like the Kelsey, being adapted only to states south of Virginia and the warm parts of the Pacific coast, while others are fully hardy in parts of Connecticut, Ontario, New York and Iowa. Those known to be hardy in the Plum regions of New York are Burbank, Abundance, Willard, Ogon, Satsuma, Chabot, Yosebe and Berger, and others still give promise of being quite as hardy. The period during which the various kinds ripen extends over a long season, running from the middle of July to the middle of September in New York. The same variety does not always appear to ripen at the same period in different years. This is especially true of the Kelsey, which sometimes varies through a period of three months. Of the market varieties tested in New York, Willard is the earliest, followed by Ogon, then Abundance and Berckmans, with Burbank still later. Kelsey is generally latest of all. Most of these plums keep for several days, and some of them even for two weeks, after they are ripe, Satsuma being one of the best keepers, so far as observed in the north. The greater portion of the varieties are red, with deep yellow flesh, while the Satsuma and a few of the less-known varieties have deep red flesh. Four well-known varieties are yellow, and eight of them are free-stones. Kelsey is recommended for the south; the best of the others are Abundance, Burbank, Willard, Kerr, Berckmans, Maru, Red Nagate, Chabot, Satsuma, and, perhaps, Ogon. One weakness of many of the Japanese Plums is that they blossom too early, and others are liable to a fruit-rot fungus. They are not, however, so subject to the black-knot and leaf-blight, nor are they so subject to injury from curculio as other Plums.

It is true that these Plums are better in fruit than our own native Plums, but we may depend that they will develop weak points somewhere in comparison with our little improved natives, and, therefore, it is important that those who have been endeavoring to improve our native species should not now relax their efforts and accept these Japanese sorts in their stead. We should welcome every new type which adds diversity to the material out of which we hope to develop fruits for every part of our country and for all uses. Our native species have hardly been rescued from the woods, while the Japanese and European types have been cultivated for centuries. These latter, too, have each sprung from single species, while our native stock offers half a dozen species to select from, so that on the whole our native species are the most promising as a foundation stock, at least; and while the infusion of this Japanese blood may help us, it is, nevertheless, true that the best Plums of the future in this country will probably be those which are borne on our native stock, improved by crossing and selection.

Notes.

Although there are more lemons in stock than are needed for present demands, and they are very cheap, prices are not likely to improve, inasmuch as 193,000 boxes and more are now in transit from Mediterranean ports. As a rule, three-fourths of the importations of lemons into this country come to this port.

In a recent number of the *Bulletin of the Torrey Botanical Club*, Mr. A. A. Heller notes that the European Iris Germanica is well established in a grassy meadow on the banks of the north fork of the Shenandoah River, in Rockingham County, Virginia, and has been flourishing there for a number of years at a distance of about a quarter of a mile from the nearest house.

Mr. V. M. Spalding, professor of botany in the University of Michigan, has recently published an *Introduction to Botany*, a

small octavo volume, intended to supplement the larger works now in use, and especially adapted for high-school instruction. Such a book is particularly needed in the states whence Professor Spalding's University draws its students, as a knowledge of botany is now required in the entrance examinations for its Literary Department.

Rods of thin metal are now made in Germany to be used as substitutes for sticks in supporting plants grown in pots. They branch out below into several slender feet, so that they are easily fixed in an erect position; and as they are hollow throughout it is said that water may more advantageously be applied by pouring it into their tops than by applying it directly to the surface of the soil.

The leading article in a recent issue of *Gartenflora* is an appreciative description of Mr. H. H. Hunnewell's fine place at Wellesley, Massachusetts, written by the editor, Dr. Wittmack, who was one of the commissioners to our World's Fair, in the Department of Horticulture. It is accompanied by a large folding print showing the Italian garden, a picture of which was given in GARDEN AND FOREST, vol. ii., p. 98.

A joint meeting of the American Forestry Association, together with representatives of several other bodies interested in forestry, begins its sessions in Albany as we go to press. The meeting will continue through Tuesday and Wednesday, and on Thursday the members have been invited to visit the Beaver River Forest, on the Adirondack and St. Lawrence Railroad, where an opportunity will be afforded of seeing the Black Spruce of that region and observing some practical forestry operations.

Mr. J. N. May writes to the *American Florist* that as the days are growing longer and the Roses are making active growth, and show the need of more food, a thin mulch of ground bone, spread thinly over the surface of the soil at the rate of twenty-five or thirty pounds to a house 100 feet long and twenty feet wide, will be found more satisfactory than liquid-manure. Half an inch of well-decayed manure should be placed over the bone, and every time the plants are watered a limited amount of food-material will be carried to the roots, and they can assimilate it more readily than if they received it in stronger solutions at rarer intervals.

The literature of spraying plants against insects and fungi is so voluminous that fruit-growers and farmers ought to welcome the Spray Calendar, which has just been issued by Mr. E. G. Lodeman, of Cornell University. All the actual information needed is here printed on one side of a sheet fifteen inches long and ten inches wide, which can be tacked up anywhere for reference. In half a dozen columns will be found concise directions for preparing each special application which is needed for the various diseases and various insects which injure our different fruits and vegetables, together with the proper time and manner of treatment, and the number of sprayings needed in each case. Altogether, this compact and carefully compiled calendar is good enough to be called an inspiration, and Mr. Lodeman deserves the gratitude due to a public benefactor.

The Experiment Station at Burlington, Vermont, has issued a leaflet which contains the reproduction from a photograph of part of a Potato-field, which shows in a graphic way the good results of Bordeaux mixture as a preventive of blight. Besides the picture, the leaflet contains some instructive figures which show the actual gains per acre from spraying Potatoes during the last two years, in checking the blight and rot. This leaflet was originally printed for distribution at the meetings of the State Board of Agriculture, and a bulletin has been prepared in which the results are given in still greater detail. This bulletin also gives the description, with an illustration, of a spray-cart which has been found useful in applying the Paris green and Bordeaux mixture. Any one sufficiently interested in this matter to send his address to the experiment station will be furnished with a copy of the bulletin.

A correspondent from Salem, New Jersey, writes that he has Winter Aconite in bloom in the open border on the 1st of March, and wishes to know if this is not unusually early. Perhaps the plant is a little ahead of time in flowering, but it usually opens with the Crocus, or earlier, and it often flowers as soon as the snow melts away. Some five years ago a Philadelphia correspondent sent us some flowers of this plant, *Eranthis hyemalis*, which he had gathered in Bartram's Garden, where it had been growing for fifty years at least. It has become naturalized, and is now the first plant there to bloom in spring. It always thrives well in groups under trees, and its bright yellow blossoms, an inch across, are very attractive in

the early season. It is a dwarf perennial with bright green leaves, and not more than two or three inches high. It has been a favorite in the gardens of western Europe, of which it is a native, for three centuries, and it ought to be more commonly cultivated in this country.

In spite of the prevailing hard times, neither flower-growers nor flower-dealers in this vicinity are making serious complaints. The market does not seem to be overstocked with the ordinary varieties, and while not as high as they have sometimes been, good flowers sell at fair prices for the Lenten season. In addition to the roses generally seen, some good blooms of the old Merveille de Lyon are offered at fifty cents each. Cape jessamines are becoming favorite flowers for boutonnieres, and sell for thirty-five cents each, and a dozen short sprays of *Jasminum grandiflorum* bring fifty cents. Among flowering plants not often sold for decorative purposes are the so-called Bottle-brush, *Metrosideros robusta*, its striking clusters of long crimson stamens closely set along the stems, and its thick leaves making a showy specimen. Messrs. Siebrecht & Wadley are also making something of a specialty of *Boronia heterophylla*, and its abundant clusters of drooping carmine flowers among its slender and graceful leaves on plants two to three feet high are very attractive. *B. megastigma*, although not so showy, has a delicious odor, and plants in flower ought to sell well. Flowering plants of *Acacia dealbata* and *Genista*, and well-berried specimens of *Ardisia* are still abundant.

In a paper on *Chrysanthemums* which appears in the last issue of the journal of the Royal Horticultural Society of Great Britain, Mr. Richard Parker, in speaking of the marvelous improvement in recent varieties, observes that it is not in size or formation of blooms or in richness of color that the most conspicuous advances have been made, but in the fact that superiority in these points have been gained in connection with a much dwarfer size, a point which is not always appreciated. For example, blooms of Viviani Morel or William Tricker can be exhibited from plants which are often little more than three feet high, while that good old variety, Madame C. Audiguier, not uncommonly ran up to a height of ten feet before a good exhibition bloom could be obtained. Among the white Japanese varieties, the tall-growing Fair Maid of Guernsey has made room for such admirable dwarf varieties as Avalanche and Stanstead White, while among the yellows, though Thunberg bears a lovely flower, yet for general usefulness, combined with exhibition qualities, it is quite inferior to W. H. Lincoln, Sunflower and others, whose habit is much more useful for decorative purposes. These dwarfer varieties, too, enable a greater number of growers—that is, those with limited greenhouse accommodation—to include some of the best varieties in restricted collections, so that amateurs and small growers are able to have as pleasing a display, even if it is not so large, as those made by persons who possess abundant greenhouse space.

At the Illinois State Experiment Station some tests have been made with a view to compare the merits of the more simple methods of training Grapes. One row was trained on a horizontal trellis made by putting two-foot cross-bars on the top of posts three and a half feet high and then stretching over them three wires, one fastened to the post and the others to the ends of cross-bars. Another row was trained on a single wire three and a half feet high. Another still on a trellis with three wires ranged respectively two feet, three and a half feet and five feet from the ground. Another was trained on a similar trellis with an inverted v-shaped trough over it made of twelve-inch boards, forming a roof twenty inches wide, which it was thought would keep off the rain and dew and to some extent stop the growth of the black-rot fungus. Another row was trained to stakes five feet high. The method of pruning was the same in nearly all cases, except that the vines attached to the stakes were trimmed closer, not more than one-half as much bearing wood being left on each vine as there was on the trellised rows. Without taking into account the differences in the five varieties of Grapes planted, those trained on the horizontal trellis with one branch of the vine running each way on each wire proved the best. The vines on the stakes made the poorest growth and gave the smallest yield. The grapes on the covered trellis have rotted less than those on the row next to it, which was not covered, but the vines yielded fewer grapes, owing to a failure of the fruit to set. The horticulturist of the station remarks that the horizontal trellis used is probably too low for general convenience, since it is easier to pick the fruit by getting under the trellis than by standing at one side of it, because the bunches mostly all hang down and are in plain sight from below.

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Floriculture for the Farmer.

THE assertion that farmers, as a rule, know as little about the processes of plant-life as any other class of men, would seem at first a gratuitous insult. Certainly the men whose livelihood depends on the successful production of crops ought to know something of the vegetable processes with which they constantly deal, and, no doubt, they do. Nevertheless, dealing as they do with crops in a large way, they often overlook the requirements of individual plants, and neglect to study their special needs. Anything, therefore, that promises to increase their specific knowledge of the functions of individual plants, of the manner in which they feed, the laws which govern their growth—in short, anything which would help to give them familiar lessons in plant physiology—would certainly be of incalculable advantage. That farmers have no such full knowledge of plants as florists have, is very evident. All the operations of lifting and potting and feeding and watering, the constant handling and examination of every part of every plant, the familiar acquaintance with the relations between the root and the top, the constant attention which plants insist upon when in a glass house under particularly artificial conditions; all these help to give the florist a familiar acquaintance with all his plants and with their particular habits and peculiarities, such as never is attained by the man who harvests the grain by the acre. And yet this intimate knowledge of individual plants would certainly make the farmer more successful in his calling.

At a recent address before a farmers' institute in Ithaca, Professor Bailey took up this subject and gave several reasons why floriculture should make an essential part of the curriculum of every agricultural college. This was not because he thought that every student should become a skilled florist, and make a business of it, but because a knowledge of floriculture would furnish a training for farm-work which could not be gained in any other way. In enumerating the distinct advantages which the study of floriculture would give to the farmer, we may mention, in the first place, that it would teach him more effectively than he can learn in any other way, how much can be produced from land. The farmer has a hundred acres, and then wants to buy all the land that adjoins him in order to raise larger crops, while the florist matures his plant from

a handful of soil, and then uses the soil over again year after year without apparently exhausting it. A pailful of soil will bring an Orange-tree into bearing condition and keep it there for years when it is cared for and fertilized as the florist knows how. The farmer simply turns his land over with the plow, and harrows it once or twice, while the gardener mixes and sifts until there can be no mistake as to the mechanical conditions or the fertility of the soil he uses. When his potful of soil is prepared he knows just what it will produce, and never thinks of failure. If the soil in the farmer's field were half as well prepared, his crops would be greater by tenfold, and yet the farmer wears out his land, and the florist never thinks of exhausting his soil.

Again, as we have already suggested, and as Professor Bailey well pointed out, the florist learns his plants as individuals. Every one of them leads a distinct and separate life and is an object of individual care and solicitude. The florist does not think of his soil as the farmer thinks of his fields. What he has in mind is his plants. Every one of them has an individuality, and in this way not one of them is neglected, and all make a better and a more profitable growth. In the same line is the lesson of conscientious attention which must be given to every detail. The farmer cultivates his Corn-field rather than the separate plants, and makes no account of the fact that there are many vacant hills, and many hills only partly filled. The florist watches his plants, and he does not spend his time over empty pots. This lesson will become more important as the practice of agriculture becomes more complex and its theories more refined. It may sound fanciful, too, but it has a solid basis in fact, that this engendering of a special regard for plants as individual objects not only would increase the farmer's interest in the farm and in his crops, but would increase the joy of his life. Agriculture would then be a companionship with living things, and this would help to bring contentment and peace.

Again, as we believe that agriculture has its basis in science, anything which gives the farmer scientific instruction, which gives him accurate habits of observation and comparison and record, is of great value. The study of floriculture offers a rich field for scientific investigation, and especially for studying practically and in an experimental way the capacities of the plant for evolution, which means, when properly directed, its capacity for improvement in the direction of man's necessities. There is no question that agriculture, so far as it is successful in the future, must break up into specialties, and a study of floriculture will not only enunciate this truth, but it will open possibilities of success in more than one direction. There are few farms in which a small glass house could not be made to pay in a great many directions. It is not impossible that a few kinds of flowers or flowering plants could be profitably cultivated, vegetable plants could be raised and sold, and fruits or vegetables could be forced. At all events, it would be a place where seeds could be tested and experiments made every winter, not to speak of the pleasure the family, and especially young people, could get from it in a hundred ways.

Floricultural schools for the special training of florists will be more and more in demand every year. Floriculture is a business which will attract more of the young men of this country from year to year, and of the young women, too, for that matter, for here is one field in which women can excel. But we agree with Professor Bailey, that every student who comes to an agricultural college should receive instruction in floriculture in considerable detail, not for its own sake alone, but as an essential part of the training for every field of rural activity. In short, it offers the soundest discipline for actual farm practice which can be found in the whole curriculum of agricultural teaching.

For illustrations of the dangers which follow the stripping of the forest-cover from the elevated sources of streams, we are usually referred to the desolation in the

region of the French Alps, and pictures of the ravage of these mountain-slopes, when scoured by torrents, have become familiar to all. We do not need to cross the seas, however, for object-lessons of this sort, and a singularly striking one was presented at the forestry meeting last week at Albany, by Professor Rothrock, in an illustrated lecture on the relation of forests to the soil. Three streams of about equal length flow in parallel courses from the ridge which forms the rim of the Susquehanna basin into the west branch of the river. The streams are about ten miles apart; they start at about the same altitude; descend with about the same rapidity, and the slopes in the drainage area of each are of similar inclination. Professor Rothrock showed some lantern-slide pictures of the westernmost of these streams, where, in its lower levels, rocks weighing several tons had been swept along by the force of the freshets, while the banks were thickly gullied and bare of vegetation. Successive views up the stream showed the destruction of roads and bridges, and, finally, at the headwaters stretched the bare crest, from which the cover of woods had been all cleared away. In the valley of this stream farm-lands were rapidly losing their fertility, and in a freshet last year thousands of dollars of public property had been destroyed and several lives had been lost. The next stream was flowing gently as a summer brook between banks, a fair percentage of which were clothed with trees up to the very springs at its fountain-head. There had been high water in this stream at the time of the fatal freshet in the first stream, but no property had been injured, no life had been lost, no soil had been scoured from the underlying rock. Along the third stream, from whose sources the timber had also been cut away, the picture of desolation in the first valley was repeated, with the same melancholy history of death and loss. The restrained and equable flow of the second stream is made the more remarkable by the fact that there are destructive torrents on either side of it, with no apparent cause for the difference, except that the trees had been saved in one case, and stripped away in the others. Such facts as these enforce in a convincing way the argument as to the value of the forest-cover as a check upon mountain-torrents and as a means of retaining the soil in its place.

Winter-blooming Plants in the Pines.

A NUMBER of plants have flowered with us all winter. One of the most conspicuous is *Sonchus asper*, which has not only blossomed all the time, but the seeds have matured, and on pleasant days the ripened heads, with their soft white pappus, have rounded out, and the seed has wafted here and there to further spread this European weed. But, weed as it is, it is not without its attractions. Sometimes the plant was half-buried in snow, but still the yellow heads stood erect, not drooping at all. Dandelions, too, have been in bloom in sheltered places most of the winter, but the seed has not matured. The trim little *Draba verna* commenced flowering in December, and is still in bloom. It is very pretty, with its thick rosette of small leaves lying flat on the ground, from which arise several branching flower-scapes, and as they elongate with flowering summits they leave behind the flat, roundish seed-pods which are almost as pretty as the flowers. A low dish of these plants, set as close together as they will stand, is an attractive table ornament. The flowers are white and about as large as those of *Gypsophila*, and any delicate flower from the garden is made doubly beautiful by inserting it among these small spray-like blossoms. The drooping *Snowdrop* is especially charming among them.

The Shepherd's-purse has tried to blossom during the winter, but, compared with our cheerful little *Draba*, it has made a melancholy failure. The stems have struggled upward, but the flowers have left only abortive seed-pods. Sweet *Alyssum* has been in flower all winter, and the perennial *Candytuft* is almost in blossom. These *Cruciferae*, as a rule, are a hardy race, and both the weeds and cultivated plants defy ordinary winter weather.

A Labiate plant, *Lamium amplexicaule*, has also been in blossom throughout the winter, and has ripened seed. It hugs the ground more closely in winter than in summer. A few pleasant days will lift it up, and its stems will stretch out rap-

idly, leaving the older whorls of flowers to mature the seed, while it forms new whorls of little pinkish purple flowers, with lower lip spotted with white. Large patches of the common *Starwort*, *Stellaria media*, were full of bloom in January, and very handsome, with its spreading stems so thickly covered with leaves as to entirely hide the ground. Interspersed among the leaves the numerous pure white star-shaped flowers were doubly welcome at this season.

Pyxidanthra has been hardly able to wait in patience, and has actually unfolded some of its blossoms now and then all winter long, but the grand opening will be a little later. *Andromeda corymbulata* was in bloom in January and still continues to flower. Many of the Swamp Maples were red with flowers early in February; other trees of both White and Red Maple still hold their flowers back. The Alders and Filberts have hung out their catkins, but are not yet ready to scatter their golden pollen. Some of the Willows were fully out in February, with insects hovering about the blossoms.

One of the most attractive plants in the garden this winter has been *Rosa Wichuriana*, which was sent from the Arnold Arboretum. The small, glossy leaves and the dark red clusters of hips, which, like the leaves, look as if they had been varnished, are very handsome and make beautiful table decorations. A few other *Roses* have more or less held their foliage, notably those with a touch of *Rugosa* blood. The trailing *Forsythia* commenced to flower weeks ago, but the cold of late February browned the blossoms as it did those of *Pyrus Japonica*, whose cherry-red blossoms have greeted us every few days throughout the winter.

In a south window of my dining-room a climbing *Nasturtium* is growing by the side of a climbing ivy-leaved *Geranium*. When the main stem of the *Nasturtium* had reached three feet or a little more, one of the leaves turned away from the light and back again, making the petiole coil around the *Geranium* and its own main stem, which it hugs closely for support; apparently not satisfied with one coil it turned the second time, making two coils. This is a remarkable case of instinct or intelligence in a plant which causes one of its leaves to turn away from a strong light in order to hold up and sustain itself. It has grown so fast that the stem-spaces between the nodes are from three to four inches in length. The stem has now reached a foot beyond the fastening and needs another support, and to-day a new leaf has made a coil like its predecessor. If all of the leaves behaved in a similar manner it would not appear so strange.

Vineland, N. J.

Mary Treat.

Exotic Trees and Shrubs for Florida Gardens.—IV.

METROSIDEROS *semperflorens*, Bottle-brush, Australian Myrtle. I have seen this shrub in full flower in April at Orlando. It grows well in the sandy soil if fertilized and mulched with muck. The flowers are deep scarlet, shaped like a bottle brush; the leaves are small and dark green. The growth is very straggling, and to obtain good specimens judicious pruning is necessary. *M. tomentosa*, of New Zealand, is a beautiful shrub of dense, compact growth, dark Myrtle-like foliage and striking crimson flowers. I saw beautiful specimens on the World's Fair Grounds in New Orleans, and at Houston, Texas, but on my place in Florida it was a failure. It evidently dislikes the sandy soil and the protracted drought in spring. In its native habitat it reaches a height of thirty to forty feet, and is called the Christmas-tree, as it is at that time in full flower.

Meyenia erecta, from West Africa, will soon be a great favorite in the gardens of south Florida, as it endures full exposure to the sun and produces its handsome blue and white *Gloxinia*-like flowers in great profusion from May to September, and sprouts readily from the roots when frozen down. This shrub can scarcely be overestimated in value for open-air culture in Florida. It is now included under *Thunbergia*, but is generally known under the name of *Meyenia* in gardens.

Myrtus communis, common Myrtle, grows to perfection on moderately good soil. A small plant which was set out in the fall of 1889 is now about five feet high, and the stem near the ground measures seven inches in circumference. *M. australis* (*Eugenia myrtifolia*, *E. australis*) is a fine Australian shrub of dense habit. The specimen on my place looks healthy and vigorous. It needs a little fertilizer and heavy mulching. In its native country it grows to a height

of from six to twelve feet. *M. tomentosa*, the Chinese Myrtle, is a pretty evergreen shrub from China and northern India. The leaves are dark green, ovate, and downy beneath. The flowers are of a fine rose color. This dense evergreen shrub thrives well in the sandy soil of Florida as far north as Federal Point.

Nerium Oleander is found in almost every door-yard of Florida, thriving vigorously without any care. Mr. F. Barthels, who has charge of my garden, planted a few cuttings of the double rose-colored form in 1888, and the trees are now about twenty-five feet high. All the varieties of the Oleander grow with equal vigor in Florida.

Osmanthus fragrans, Sweet Olive, Tea Olive, of China. This is one of the most beautiful and valuable evergreen shrubs for the extreme south Atlantic and Gulf states. Dense and well-shaped specimens from five to twelve feet high, and almost as much through, excite our admiration. Planted with *Michelia fuscata*, *Gardenia florida*, *Abelia rupestris*, etc., striking groups are formed. If nice and bushy specimens are desired, the pruning-knife must frequently be made use of. Left to itself, the Sweet Olive has an open straggling growth. The plant grows well on high Pine-land, if well mulched and fertilized. The small creamy white flowers among the dense foliage appear from early spring until late in the fall, and shed a delicious fragrance.

Santolina Chamæcyparissus incana, of south Europe, is a pretty dwarf evergreen plant. The aromatic leaves are covered with a silvery down. This plant, which thrives to perfection in the state, is very useful for edging and for divisional lines. *Rosmarinus officinalis* also grows well in the gardens of Florida.

Tabernaemontana coronaria fl. pl., East Indian Rose Bay, grows exceedingly well with a little care. This beautiful shrub is found in the gardens throughout India, but its native country is unknown. In the greenhouses of the north it needs much care and a high temperature, and then is grown with difficulty. In the open air in Florida it attains a height of five feet. The flowers are highly fragrant, double, white, with somewhat wavy edges. Throughout the summer these shrubs are covered with their deliciously scented flowers. The first slight frosts cut the plant down, but in spring, when all danger of frost is over, it again grows on rapidly, and repays all trouble with a wealth of noble flowers.

Tecoma stans, Yellow Elder, Yellow Bignonia, Upright Trumpet-flower, a native of tropical America from the West Indies and Mexico to Peru, is one of the best-flowering evergreen shrubs introduced into Florida. It attains a height of from ten to twelve feet in a season, and in Orlando I have seen specimens fully twenty feet high. It is one of the comparatively few erect-growing members of the Bignoniæ. Flowering as it does from early fall to late in winter, and having a dense upright growth, it should find a place in every south Florida garden. The pinnate leaves consist of five to eleven lanceolate, deeply serrate leaflets, and at the ends of the upright stems immense panicles of large golden yellow tubular flowers appear, often weighing down the stems to the ground. When in flower these magnificent shrubs excite the admiration of even the most indifferent observer. In their form and color the flowers are much like those of the beautiful *Allamanda Hendersonii*. The yellow Bignonia is very quick-growing; it delights in the sandy soil, and sprouts readily when frozen down. There are several other members of this genus—*Tecoma velutina*, *T. chrysantha* and *T. Smithi* (a hybrid between *T. velutina* and *T. Capensis*, raised in Australia)—which will flourish under the same conditions as the foregoing.

Thevetia neriifolia, Trumpet-flower, Yellow Oleander, of tropical America, is a fine Oleander-like plant with yellow flowers and curious fruit. It is one of the best ornamental shrubs for south Florida. The foliage is narrower than those of the Oleander, but the plant is frequently confounded with that shrub. The habit is dense and very

ornamental. All parts of the *Thevetia* are very poisonous. In Orlando I saw beautiful specimens in many gardens.

Millwaukee, Wis.,

H. Nehrting.

Foreign Correspondence.

London Letter.

RHODODENDRON MULTICOLOR was introduced from the mountains of Sumatra by Messrs. J. Veitch & Sons ten years ago, and soon afterward was figured in the *Botanical Magazine*. Plants of it have lately been in flower several weeks in a stove at Kew, and they are quite distinct in habit from all other Rhododendrons, and the flowers are pretty in form and color. The species is remarkable in forming a twiggy dwarf shrub, with long narrow Willow-like foliage in whorls and terminal loose umbels of nodding flowers. These are an inch wide and long, bell-shaped, with five equal ovate corolla-lobes and scarcely any calyx. For garden purposes, what is known as the type is one with primrose-yellow flowers, a second one with bright crimson flowers, being named *Curtisii*, after Messrs. Veitch's collector. These plants are happiest under stove treatment. Messrs. Veitch have now numerous hybrids between *R. multicolor* and other Malayan Rhododendrons, one of which, named Mrs. John Heal, was awarded a first-class certificate by the Royal Horticultural Society last week. It is from the yellow-flowered type crossed with the hybrid *Princess Beatrice* (the offspring of four species), also yellow-flowered flushed with pink. The new one is remarkable in having pure white flowers, each nearly two inches across, and the plant is evidently very free-flowering. A character peculiar to the *R. multicolor* hybrids is their close, twiggy habit of growth, suggestive of *Azalea Indica*, and their free-flowering nature; plants a foot high flower freely. The older Malayan hybrids, such as *R. Princess Beatrice*, *Princess Helena* and *Prince Royal*, grow fairly well in a greenhouse along with *Camellias* and Himalayan Rhododendrons, but these multicolor hybrids will probably require more warmth. They are a decided acquisition for the indoor garden.

CAMOENSIA MAXIMA is a tropical African climber, of which cultivators have long known enough to create a desire to grow and flower it, but, like some other beautiful tropical plants, it unites a free-growing habit with persistent barrenness in regard to flowers under artificial treatment. I know of big specimens in gardens, one of which has been coaxed and ill-treated and coaxed again at Kew, in the hope that it would relent and flower, but although it grows freely, no matter what the treatment, it shows no sign of flowering. It is, therefore, tantalizing to learn that a small plant sent to Ceylon from Kew in 1883 is now in flower there and is a rival to *Amherstia nobilis*, which is always in flower. There is a picture of the flowers in the *Transactions of the Linnean Society*, vol. xxv., a copy of which is published by Mr. Bull annually in his plant catalogue. The plant is a woody evergreen climber, with trifoliate leaves of good substance, and the flowers, according to Dr. Trimen, are erect (not pendulous, as hitherto believed) in axillary racemes, and when freshly expanded the petals are very beautiful, the standard being over seven inches long, the others six inches, all of a delicate pure white thin tissue-like texture, with a narrow yellow fringe-like gold lace. I suspect bright sunlight, and plenty of it, is needed to make this plant flower, and as you have plenty in most parts of America, it ought to prove more tractable with you than it does here. *Camoensia* is a leguminous genus of two species, and *C. maxima* was described by Bentham as "much the most striking plant of a suborder (Sophoreæ), which is noteworthy for the beauty of the plants it contains." It was introduced from Angola to Kew many years ago.

OXALIS CRENATA.—A few weeks ago a box of tubers was received by a Covent Garden salesman from the Azores, unaccompanied by any information except that the sender knew they were good eating, and might "take" in Eng-

land. Not knowing what they were, he sent some to Kew for identification, where they were recognized as the tubers of this *Oxalis*, which has been tried in France as a substitute for the potato, and which is much esteemed as a vegetable in some countries. The tubers are cylindric, from two to three inches long, thicker than a man's thumb, marked with numerous eye-like depressions, and colored externally bright crimson. They are white-fleshed and sweet to the taste when raw. Cooked they were not particularly palatable, possibly because they had not been properly cooked. According to Vilmorin, this is the "Oka" of the Peruvians, and is highly esteemed in Peru and Bolivia, being largely used there. The tubers are acid when first gathered, but by putting them in woollen bags and exposing them to the action of the sun, in a few days they become floury and sweet. The tubers do not swell till late in the season, and they are not dug until after frost has destroyed the tops. They are planted in May in light rich soil in rows three feet apart. Two varieties are grown in France, the yellow and the red, and a third variety with white tubers has been raised there. The stems of the plants are fleshy, reddish, prostrate, and the leaves are succulent and trifoliate. It is possible that this *Oxalis* may yet become a favorite vegetable. It is well worth trying. Some of the American experiment stations might take it in hand. The tubers are good to look at, which is a point to be considered in a new vegetable.

THREE GOOD LACHENALIAS.—I mentioned *L. aurea gigantea* a few weeks ago as a first-rate garden-plant. It is attracting considerable attention here, its rich clear yellow color, tall stout spikes and numerous flowers being exceptional in the genus. It is certain to rank first among *Lachenalias*, both species and hybrids. It was introduced to Kew two years ago from Port Elizabeth simply under the name of *L. aurea*. The second in the trio is *L. pendula Aureliana*, about which an interesting note was published in *GARDEN AND FOREST* last year, page 124. Whatever its origin, it is a superb plant and a most distinct one. An example of it now in flower at Kew has a spike a foot high, bearing a dozen large flowers of a rich red color, not a dull red, but brilliant as *Brodiaea coccinea*. The leaves, too, are broadly ovate, not linear or strap-shaped, as in other *Lachenalias*. In the note above referred to, this plant is said to produce as many as forty or fifty flowers on a spike. I have never seen more than twenty-six flowers on a spike of any *Lachenalia*. Growers of these plants here are busy crossing these newer giants with the older sorts. The third species to which I would direct attention is the form of *L. tricolor*, called *quadricolor maculata*, which has tall scapes and large flowers, the outer segments of which are yellow, tinged with red, and the inner green, with a broad margin of brown-purple. These three are now in flower in the Cape-house at Kew. They deserve to be grown in every garden where there is a glass house. The older kinds are pushing up their spikes, and will soon make a brave show, and will keep us going with *Lachenalia*-flowers till May. That is one of the charms of these plants; they are easily grown, their flowers are pretty and variable in form and color, and they last a long while.

GRAMMATOPHYLLUM GUILLEMI IL.—KRANZLIN. Plants of this new species were sold to-day at an auction sale and were described as resembling *G. Measuresianum* in habit of growth; its flower-stalk averages two to three feet in length, carrying from twenty to fifty flowers, the individual flowers being some four inches across; the sepals and petals are pale canary-yellow on the outer side, the inner side being almost entirely covered by a bright chocolate blotch, leaving only a narrow rim or margin where the ground is visible; the lip is white, streaked and marked with chocolate; the inside is velvety. In its native habitat it is found growing on trees fully exposed to the sun. This is the fifth addition to this genus made by nurserymen within the past five years. They are all tropical, and, so far as general experience goes, extremely difficult to flower.

London.

W. Watson.

Entomological.

The Plum Curculio on Apple.

THE very interesting communication of Mr. J. G. Jack, in the issue of *GARDEN AND FOREST* for January 31st, points to a fact to which I have called attention in some of the publications of the New Jersey Experiment Station. That is, while in most of the varieties of apples grown in this state the curculio larva finds it impossible to develop, yet there is at least one, the Baldwin, which, for some reason, will mature the curculio larva as readily as the plum itself. On most varieties of apples the curculio will feed, as described by Mr. Jack, and will also lay its eggs. If the apple remains on the tree the egg rarely hatches. Whether it is that the egg is crushed by the rapid growth of the fruit, or whether the character of the juice is such that it overwhelms the young larva when newly hatched, is not clear; but certain it is, that in those apples that remain upon the tree, even when they are punctured half a dozen times or more, no larvæ can be found. In one case I counted on a half-grown apple thirty-seven egg-punctures, and from not one of them had a larva issued. On the other hand, from every apple that dropped to the ground I was able to breed a larva for every egg-puncture, and the insect finds no difficulty in maturing in apples of any variety after they have dropped from the tree. My suggestion is, that in most cases, and as a rule, the work of the curculio larva does not cause a dropping of the apples; even in the Baldwin I found that apples on the tree infested by curculio larvæ remained attached to the stem until the fruit practically dried up and after it had been abandoned by the larvæ.

This is an important fact, that the attack of the curculio on apple does not cause the dropping of the fruit; but that in dropped fruit the curculio very readily develops. Of course, this points to the recommendation that has been made for other purposes—that the orchard be kept clear of fallen fruit. In New Jersey many growers accomplish this by pasturing hogs, sheep or cattle in the orchard and thus keeping the ground tolerably free. Such orchards suffer comparatively little. It goes without saying that when fallen fruit is gathered from an orchard it should be destroyed, otherwise the larva finds no difficulty in maturing, no matter where the fruit may be piled. Another point of some interest to which I have called attention is, that the range of food-plants of the plum curculio may be larger than we now know of. Two or three years ago I captured specimens of the beetle on the June-berry, *Amelanchier canadensis*, and on many of the berries found the characteristic egg-punctures, while still others had been almost entirely hollowed out by what was certainly a curculio larva, and probably of this particular species.

Rutgers College,

John B. Smith.

New or Little-known Plants.

Cercidiphyllum Japonicum.

A FIGURE of this remarkable tree appears in the illustration on page 106 of this issue, the first which has ever been published, in which Mr. Faxon has worked out the structure of the flowers and fruit from material for which I am indebted to Professor Miyabe, of the Agricultural College at Sapporo, in Yezo.

In *Cercidiphyllum** the leaves on sterile shoots are either alternate or opposite; in their axils small acute red buds, covered with four to six thin scarious slightly imbricated scales, are formed early in the autumn. The branchlet ends during the winter in a small scar between two buds when the leaves are opposite, and at the side of a single bud when the leaves are alternate. Early in the following spring the buds develop short spur-like, almost obsolete, branches, which produce a single leaf and terminal flow-

* Siebold & Zuccarini, *Abhand. Akad. Münch.* iv., pt. iii., 238.—*Flora*, 1847, 729. Walpers, *Ann.*, I., 364.—Maximowicz, *Mé. Biol.*, x., 367.

ers. Later a bud is formed in the axil of the leaf, which, on fruit-bearing trees, appears between the leaf and the stalk of the fruit-cluster. The branches, therefore, in their second and third years appear to be clothed with opposite or alternate leaves, although the leaves are in reality produced on lateral branches. The leaves are involute and coated on the lower surface in the bud with pale caducous pubescence, and are furnished with lanceolate, acute, caducous stipules slightly connate toward the base. The staminate and pistillate flowers are produced on separate individuals, the staminate subsessile, solitary or fascicled, the pistillate solitary and pedunculate. The staminate flower is composed of a minute scarious calyx divided to the base into four acute apiculate divisions, and of an indefinite number of stamens; the filaments are slender, elongated and inserted on a conical receptacle; the anthers are oblong-lanceolate, attached at the base, apiculate by the prolongation of the narrow connective, and two-celled, the cells opening longitudinally throughout their length. The pistillate flower is composed of a membranaceous calyx divided into four unequal sepals laciniately cut on the margins, and of four or sometimes of five or six carpels inserted by their oblique bases on a prominent pyramidal receptacle; they are gibbous and acute on the ventral suture, and straight and rounded on the dorsal suture, and are gradually narrowed into elongated slender styles stigmatic on their inner faces below the middle; the ovules are inserted in a double row on the placenta and are descending and anatropous. The fruit is a cluster of two to six, more or less spreading oblong stipitate follicles tipped with the persistent styles and splitting through the ventral suture, which by a twist usually becomes external. The pericarp is thick, light brown and lustrous, and is separable into two layers; the outer layer is thin and membranaceous, and the inner layer is hard and woody, and lustrous on the inner surface. The seeds, which are closely imbricated, in two rows, are pendulous, compressed, nearly square, attached obliquely, and covered with a thin light brown membranaceous coat, which is produced into an elongated terminal wing three times as long as the body of the seed, and slightly narrowed at the apex. The embryo is axile in copious fleshy albumen, with plane cotyledons about as long as the slender, superior radicle turned toward the hilum.

The affinities of *Cercidiphyllum* are with the Asiatic genera, *Euptelia* and *Trochodendron*, which were united by Bentham and Hooker into their tribe, *Trochodendrea*, in *Magnoliaceae*.^{*} By Prantl† *Cercidiphyllum* is placed with *Euptelia* and *Trochodendron*, in his new family, *Trochodendraceae*, which is, perhaps, as satisfactory a disposition as is likely to be made of these genera, which, in several characters, resemble one another, but are not very closely connected with *Magnolia*.

In the last volume of *GARDEN AND FOREST* the illustration on page 53 (Fig. 9) represents a noble specimen of *Cercidiphyllum japonicum* growing in the forest near Sapporo, on the island of Yezo. That on page 107 of the present issue represents the upper portion of another tree in the same locality, and shows the numerous slightly spreading stems and the small pendulous branches which this tree usually produces in its native forests.

C. S. S.

Cultural Department.

The Cultivation of Violets.

THE best time to propagate Violets, in my opinion, is from the middle to the end of April, when the plants finish blooming. Some growers divide the old plants to single crowns, and plant them outdoors at once, while the greater number of cultivators prefer runners for new stock. I have tried both methods, and find that while the plants grown from single crowns are larger, the flowers produced from

runners are superior in size, of a darker color, have larger and stiffer stems, and are much more numerous.

To produce good Violets it is quite unnecessary to commence propagating any earlier than I have suggested. Violets resent coddling, and a great many failures are caused by too early propagation and carrying the runners in heated houses during a large part of the winter. It is neither necessary nor desirable to have large clumps in the fall of the year. A small plant with one good crown will give good blooms, and more of them in proportion to the ground occupied, than a plant composed of several crowns. When our plants are done blooming we insert the runners quite thickly in well-drained boxes of sand, and place them in a shaded cold frame close up to the glass. Air is freely admitted at all times, watering carefully attended to, and few runners fail to take root.

From the beginning to the middle of June we plant out the runners in rows between Currant and Gooseberry bushes, allowing a foot between each plant. They are well watered when set out, and no further attention is given them until lifting-time beyond the necessary hoeing, weeding and removing of runners. The Violets are set between rows of fruit-bushes to economize space, and they will do fully as well in any open space in a batch by themselves. If the ground is moist, all the better, and a shaded location is not necessary.

We lift our Violets about September 1st. Except a few which are grown in eight-inch pots on a shelf in the Carnation-house, they are all placed in cold frames. Our frames face almost due south, which does not give the conditions recommended by many Violet-growers. In the bottom of the frames we place nine inches of well-rotted manure, and over this a compost composed of loam, chopped leaves, half-rotted cow-manure and about a half-barrow-load of sand is used to a sash. The loam, leaves and manure are in equal proportions. Twenty-four plants are placed in a sash. A thorough soaking of water is given after the planting, and watering is carefully attended to as it is required. Sashes are not placed over the plants until frost is expected. In November we pack the sides of the frames with dry leaves to the thickness of eight inches; by this means, with the aid of mats and shutters, frost is kept out when the temperature is below zero. A freezing will not injure the plants, but it is advisable to let them thaw out before exposing them to sunlight. Snow must not be allowed to lie on the frames for more than two or three days at a time, and the plants should be aired at every suitable opportunity. They should be gone over at least once a week, and all decaying and diseased foliage be removed. Watering must not be neglected; more Violets are ruined by being kept too dry than too moist. During this winter I find that our plants were watered once in December, twice in January, three times in February, and every three or four days in March. Liquid-manure is applied from February onward. The watering must be done on the morning of a clear, bright day, and the plants must not be wet from overhead during the winter months. After the middle of March the watering may be done in the evenings. During the early part of March we give our sashes a coat of lime-wash; this is not only beneficial to the plants, but the flowers do not lose their color so rapidly.

Since the middle of October we have picked Violets at least once a week, and at this time are getting an average of 500 flowers from each sash during a week. For our main crop we grow only Marie Louise, and have had no spot on it for the past two seasons. Swanley White and The Czar, growing side by side, spotted quite badly last August, and as applications of Bordeaux mixture did not remedy the trouble the plants were not lifted. For a late supply we grow the Double Russian, which does not give much bloom until the middle of March. There is no variety equal to Marie Louise, if it can be well grown, but to those who are not successful with it I would recommend Lady Hume Campbell, which I have seen in very fine condition this winter. Though paler in color than Marie Louise, the flower is of large size, very fragrant, and much superior to Neapolitan. The Czar, Wellsiana and Victoria Regina are useful single varieties and of good color, and a limited number of these are worth growing for their foliage alone, as the leaves on Marie Louise are never very large.

We find that Violets succeed better in a compost such as we are using this season, than in a stiffer and heavier soil used in previous years. If flowers are wanted during the entire winter from cold frames, as sunny a location as possible must be selected, and as Violets are moisture-loving plants they must never be allowed to become at all dry at the root.

The roots of Violets are considerably injured in lifting in the fall, and we purpose avoiding root-disturbance by planting a few sashes with runners in June and watering them well all

^{*} Gen., i., 954.

† Engler & Prantl, *Pflanzenfam.*, iii., pt. II., 21.



Fig. 21.—*Cercidiphyllum japonicum*.—See page 104.

1. A flowering-branch of the staminate tree, natural size.
2. A staminate flower, enlarged.
3. A flowering-branch of the pistillate tree, natural size.
4. A pistillate flower, enlarged.
5. Vertical section of an ovary, enlarged.

6. A fruiting-branch, natural size.
7. A seed, natural size.
8. Cross section of a seed, much magnified.
9. An embryo, magnified.
10. A winter branchlet, natural size.
11. A leaf unfolding with its stipules, enlarged.



Fig. 22.—*Cercidiphyllum Japonicum*.—See page 104.

summer. The sashes will be used when the heavy dews and rains of August and September set in, for these start the spot. A near-by market friend follows this plan, and his plants are spotless and the blooms are excellent. As frames are much in demand for other crops during the early summer months, many growers will be slow to make this experiment unless strong proof can be given of the benefits to be derived.

Taunton, Mass.

W. N. Craig.

Imantophyllum miniatum.

THIS is a plant more often seen in old gardens than in those of recent origin; in other words, it is considered an old-fashioned plant. There are too many such that we rarely meet, although they are sometimes made popular by a sudden freak of fashion, and every one then sees how real merit has been unsuspected or forgotten. *Clivia nobilis* and *C. miniatum* are very old garden-plants, and under these names were much grown at one time, then almost forgotten, until a set of hybrids of improved color and size appeared to awaken fresh interest in them. *Clivia* is still the correct name, but as *Imantophyllum* has become so well fixed in gardens, it has been retained for every-day use.

The newer varieties are as yet quite rare, owing to the slow means of propagation, by division only, and the consequent high price. It also happens that as soon as they become known, the demand equals the supply, and this helps to keep the price high. It is easy to raise seedlings of a plant impregnated with its own pollen when in flower; it takes about a year, however, to mature the seed, and three or four years more to get the plants to flowering size, but it is interesting work, and gives one something to look forward to. The *Imantophyllum* belongs to the *Amaryllideae*, but will not cross with the *Amaryllis* proper. At least, such has been my experience, while others have succeeded in raising hybrids from *Eucharis* and *Urceolina*, both genera of the same order.

As decorative plants the *Imantophyllums* rank high. The broad, dark green, strap-shaped foliage is ornamental at all seasons, while the bright orange-red of the flowers, which are produced in the early spring months, are most useful, owing to their lasting qualities, distinct color and long stems. An ordinary greenhouse temperature of fifty degrees is best suited to these plants, though young ones may be nursed along in a warmer house. Strong sunshine is injurious even at this time of the year, and causes the foliage to lose its healthy dark green color and to become a sickly yellow. A shady position is, therefore, essential. We sometimes place them under the benches when not in active growth. Repotting is best done in spring, but the plants should not be disturbed often at the roots. A good sound potting-soil is best—a mixture of loam, made porous with powdered charcoal and sand, with a little bone-meal added as a fertilizer of long-lasting properties. Young growing plants require repotting annually, but those of flowering age may be examined once in two years, and this will be found often enough, unless the drainage is found to be at fault.

South Lancaster, Mass.

E. O. Orpet.

Orchid Notes.

WE are living in a time which may be looked back upon some day as the palmy days of Orchid-culture. It does not seem possible that these plants could be more popular than they are at present, nor that they can hold many more surprises in store for us. When, however, the collector fails us with new and startling Orchids, we shall still have the hybridist to depend upon, and with the abundant material at his command we may confidently hope that new plants of real merit will still be produced.

As they have flowered, the merits of most of the recently introduced Orchids have been noted here, and now another is in bloom with us for the first time. As a distinct *Cypripedium*, *C. Chamberlainianum* has some merit, though more, perhaps, for the hybridist than for the ordinary cultivator. Last fall I saw a plant in bloom in a celebrated collection, and was told that this was an excellent variety, and this opinion is now confirmed by the plant in bloom here. The slipper is very different from that of any other member of the family, being bright rose-colored, covered with minute spots. It is the redeeming feature, the dorsal sepal being green, with ill-defined black lines, and the lateral petals are slightly twisted and also spotted with black or very dark brown. *C. Chamberlainianum* is a very free grower, but requires the moist heat of the warmest house. Thus far, only one flower has opened at a time on the many-flowered stem, and the distance between the open flower and the next succeeding bud is considerable—too much

to warrant us in expecting to see more than one flower open at the same time.

In the collection of Mrs. F. L. Ames at North Easton, Massachusetts, there has flowered during the past two seasons *Cypripedium insigne Sanderæ*, admitted to be the most beautiful of all *Cypripediums* by all who have seen it. *C. insigne Sanderæ* is but a form of a very old Orchid, but one more lovely does not exist in cultivation. The green and brown of *C. insigne* is wholly absent, and the upper sepal is a clear bright yellow, with a pure white apex. This variety is a chance introduction among the ordinary forms of *C. insigne*, and is, of course, very valuable. It is hoped, however, that more plants of the variety will appear, as the great quantities of *C. insigne* which have been imported with this end in view, come into flower. Should there be no more forthcoming from their native wilds we have still the satisfaction of knowing that, under the skillful treatment of Mr. W. Robinson, at North Easton, the plant increases twofold each year. Of course, it is very rare in commerce at present.

Boston.

Plantsman.

Annual Flowers from Seed.—V.

TORENIA FOURNIERI is one of those flowers "with an aristocratic and high-bred air" which will always attract attention in the largest collection. It can be unreservedly recommended as a garden-plant, especially to those who are fond of the less garish and obtrusive flowers. The plants are small, much-branched, usually under a foot high, and every shoot has one or more flowers, velvety rich royal purple, shading to blue, with yellow throats. There are also *Torenia*s with white and with yellow flowers. It is usual to raise these plants from seed sown in the greenhouse, but as I have had abundant crops of plants from self-sown seed in the open, I think that seed sown in a frame outside would germinate successfully. The seeds are very small, and should have the merest trifle of covering.

In sharp contrast to these we have lastly the *Zinnias*, "such coarse flowers." There is not much delicacy of petal or grace of form in the *Zinnia*, but there is nothing else among the annuals which will give such a wealth of color in a garden as a well-grown plant of *Zinnia*. Marvelous colors mark some of them, in tints not seen in other flowers, and these colors are no mere suggestions eluding one, but are laid on the petals in honest solid masses. I like the *Zinnias*, and like them big. They are not only cheerful in the garden, but cut in bold pieces they lighten up the dark corners of a room finely, though, perhaps, they are hardly in keeping with a sentimental corner.

From the list I have given, individual readers will miss some favorite annuals, but those reviewed seem to me in most points the more desirable ones for general cultivation. Those omitted mostly appeal to some special fancy. I have made little note of two things on which inquirers usually dwell with some persistence; these are fragrant flowers and plants for foliage—"greens" in the vernacular. As to the first, there are, of course, other fragrant flowers, as the Stocks, which are lumpy stuff, but a fair proportion of the flowers are more or less fragrant, and if others are not, and a touch of odor is desired, it seems better to add a piece of the inconspicuous *Mignonette* rather than add some flower of a conflicting form of beauty; several odors blended seem to me a crude mixture in a bouquet.

Nature does not seem to have adapted any annual plants to the wants of bouquet-makers, or at least there are none which are especially desirable for this purpose. Those who must have some foreign foliage for their flowers must continue to use Iris leaves with their Fuchsias or some such abominable combination as is customary in otherwise civilized communities. Of course, every one knows how to arrange flowers, and nothing seems to trouble the color-blind less than the composition of a bouquet, providing the assortment of flowers is sufficiently large. We have all seen the process, commencing by reducing any inordinate length of stem and ending with chaos. Arrangements of one kind of flower, and not many different tones of these, or at most of two species of flowers of complementary colors and harmonious forms, will furnish difficulties which will sufficiently tax the artistic capabilities of most of us. Beyond this is safe ground only for those with a trained appreciation of the value of form and color. Vulgarly and bad taste may be expressed by flowers as well as by other things which appeal to our sense of form and color, and the key-note of flower arrangements should be simplicity. Grow all favorite flowers in abundance, and if each variety is gathered with a generous share of stem and foliage they quite arrange themselves. We are apt to overdo bouquets in the way of foliage, that gathered with the flowers being often sufficient. Where

a plant does not supply satisfactory foliage, of course one should use something not more bold than is natural to the plant. It also does not seem exactly right to use something which has a dissimilar association. For instance, shade-loving Ferns are out of character with flowers which are full of color and sunlight, though this would not offend those to whom flowers are merely ornamental objects.

Elizabeth, N. J.

J. N. Gerard.

Correspondence.

To Protect Lake-shores.

To the Editor of GARDEN AND FOREST :

Sir,—Can you or any of your readers inform me of the best means of preventing the falling away of the banks on an island in a fresh-water lake, where the extent of shore renders the building of a sea-wall entirely too expensive? The soil is light and sandy and is pulled down more by the effect of frost and rains than of waves, but is also exposed in places to wave action. Would the planting of Willows preserve the banks? If so, what variety is best for the purpose? If Willow-seed were planted as late as July 15th, would the plants be likely to survive the winter of northern New England?

Derby.

[A bank such as our correspondent describes can be saved from washing by planting Willows and other shrubs, which can be faced on the water-side by bulrushes and other moisture-loving herbaceous plants. Probably no better shrubby Willows could be selected for this purpose than some of the native species which may be found in the local swamps and wet places. The narrow-leaved Silky Willow, *Salix sericea*; the Petioled Willow, *S. petiolaris*, and the Heart-leaved Willow, *S. cordata*, are among the best for such use. The Glaucous Willow, *S. discolor*, will also thrive in such situations, but it grows taller than the other species. Small plants may be moved from their native habitat and planted near the margin of the pond, and some of their branches may be bent over on each side and layered deeply, and in this way a mass of plants would be speedily obtained. Or cuttings from one to two feet long may be taken in the autumn or spring. These cuttings should have their lower ends shoved ten to twelve inches into the soil. They may be planted pretty thickly together, as not all of them are likely to grow. Cuttings of some of the foreign species of Willow, like the Basket Willow, form roots more readily than some of our indigenous species. Of course, cuttings are better than seeds. Besides the Willows, Alders may be found a good protection for the banks of ponds in some situations; and our native Button-bush, *Cephalanthus occidentalis*, will thrive and hold the soil in places so wet and boggy that even Willows and Alders will not grow. The way to assured success from plantings of this character is to study the undisturbed natural banks of a lake in the same region, noting the plants that are found associated together in such situations and then reproducing, as far as possible, the effects produced in nature. A mere list of herbaceous and other plants that could be used to hold the banks of a lake in any given locality would be of little practical value, for such plants can rarely be obtained from nurseries, and have to be collected from their native wilds.—ED.]

Meetings of Societies.

Forestry Congress at Albany.

THE forestry meeting at Albany last week was particularly successful in the number of representative men from different states and from different associations who took part in it, and in the practical quality of many of the papers read. On the first evening Mr. Fernow delivered an illustrated lecture, entitled "The Battle of the Forest," which showed in a graphic way how the forest, after millenniums of struggle, conquered its way to a full possession of the earth until man began to make inroads upon it. Pictures of the desolation which followed the wasteful use of the axe in the Adirondacks and other parts of the United States were most instructive, as were the views of the ruin wrought in the French Alps, where

the removal of the forest-cover had let the torrents loose to work their will. Very instructive, too, were the pictures of the costly work of the forest-engineers of the French Government now in progress to repair the damage which their own improvidence had invited, works which we shall need to duplicate with equal expense unless we heed this warning. Another illustrated lecture was given by Professor Rothrock on the relation of forests to the soil, and some of its pictorial lessons are mentioned editorially on another page. Among other pictures which taught important lessons were two views of a White Pine forest on land which Professor Rothrock himself remembers to have been a barren sand-hill thirty years ago. The trees now stand about seven feet apart, with tall straight trunks fifteen inches in diameter two feet from the ground. A lecture by Professor Bickmore was also illustrated with views of forest-scenery selected for their beauty. A carefully prepared paper by Mr. Gifford Pinchot set forth the difference between forestry and lumbering with the application of the subject to the North Woods. The paper is too important to be dismissed in a sentence, and we shall treat of it more fully in a future number. The paper of Mr. H. B. Ayres on forest-fires was so compact that we shall be able to publish it in full next week.

At the first day's meeting the reports from the various states were unusually interesting. Professor Rothrock spoke for Pennsylvania; Professor Smock, director of the State Geological Survey, spoke for New Jersey; Secretary Gold, of the State Board of Agriculture, for Connecticut; Secretary Moses, of the Forest Commission, spoke for New Hampshire; Secretary Appleton, of the State Board of Agriculture, spoke for Massachusetts; Colonel Fox for New York; Mr. William Little for Canada, and Mr. R. U. Johnson, of this city, being an honorary member of the Sierra Club, was asked to represent California, and made one of his vigorous pleas for the salvation of the Yosemite National Park. He offered a resolution, which was adopted, approving the national policy of setting apart forest-reservations and endorsing the McCrea bill, which provides a plan for administering these reservations. The readers of this journal need not be informed that the measures which have been taken in the states named and in others for administering their woodlands are altogether inadequate for the needs of the time; but these reports did seem to show a gradual improvement in the tone of public opinion in this matter. This does not sound like a very decisive step toward reformation, but it is the first step which costs, and, beyond question, the only way to assured success is to start with enlightening public opinion.

Among the other notable addresses at the meeting was an off-hand speech by Bishop Doane, in which he lamented the fact that the Adirondacks were becoming something like a fashionable resort, which was to be occupied by the same set of people who tried to amuse themselves at Newport and Lenox at different seasons of the year. When visitors come away from the alleged camps in the woods with vivid memories of porcelain bath-tubs he feared that the contact of these people with nature was not so intimate as it should be, and he feared, furthermore, that society would fatally injure the woods before the woods had an opportunity to regenerate society. At the same session, Dr. Ford, of the Climatological Society, spoke of the prophylactic and therapeutic value of camp life in the woods against what is known as American nervousness—that exhaustion of vital force which affects so many of our countrymen. He knew of no treatment for this disease which could compare with a few weeks in the thick woods of the western Adirondacks.

The only subject which caused any discussion was a resolution favoring in one section the purchase of the lands within the boundary of the proposed state forest, which was approved, as was also the section advocating the issue of bonds for a million dollars, and a third section restricting the selling of outlying parcels of state land to such areas as are fitted and desired for agricultural purposes. For the next section, which favored the policy of the commission as set forth in their report, Mr. Fernow offered a substitute to the effect that no timber of any kind shall hereafter be cut and sold from the state lands until a comprehensive and systematic plan of management has been devised and such methods of supervision instituted as will ensure the permanence of the forest-cover and the reproduction of the valuable kinds of timber. An additional section affirmed that the practice of cutting all the Spruce above twelve inches in diameter does not ensure in all cases immunity from the danger of seriously interrupting the forest-cover and is apt to impair the future of all the forest. Both of these propositions seemed to the best-instructed portion of the meeting entirely proper, but they were strenuously ob-

jected to by Colonel Fox as a criticism on the commission, which would possibly lead the legislature to refuse the appropriation of a million dollars, which he thought the commission needed. After much argument on both sides, in which no one attempted to explain why the executive officers of the forest-commission had made no attempt to devise such a plan of management as had been advocated by Mr. Fernow, and which he said an expert could prepare in four weeks, a substitute for both resolutions was offered and apparently adopted without debate. So far as we are able to understand it, this substitute has no positive meaning whatever.

It seemed to many of the friends of the Adirondacks that the commission were unduly eager to sell some Spruce-trees in order to show a little revenue. The people of the state generally see through matters of this sort, and it is not to be assumed that the collection of a few hundred dollars will hurry them up to hand the desired millions into the hands of the commission. They certainly will not make great haste to do this if it is pointed out to them that the method, or lack of method, which is used in cutting the Spruce can be shown to be injurious to the forest. Suppose the commission should follow the advice of Messrs. Fernow and Pinchot, and formulate some plan to begin on, and show this plan to the people instead of the money which they get from a few Spruce-trees at nine cents or more apiece. Such a course might give them an established position in the confidence of the people, and, perhaps, it might be the best way to secure an appropriation, as it certainly would be the safest way to treat the forest.

Notes.

The herbarium of the late Dr. C. C. Parry, containing some 16,000 specimens in excellent condition, has been purchased by the trustees of the Iowa Agricultural College, at Ames, Iowa.

The old homestead of Abraham Lincoln's family, in Larue County, Kentucky, has been purchased by a syndicate of Kentuckians, who intend to have the place laid out as a park, and then present it to the Government for public use.

Among some bits of timely counsel which Mr. William Scott gives to the readers of the *American Florist* is the advice not to throw away a pan of Canna-seeds because only a few plants have germinated. Pot off those which are a few inches high, and keep the seed-pan warm and moist, and plants will continue to appear for months.

Of the Roses grown for cut flowers in the open air on the Riviera nine out of every ten are Safranós, although this variety is rarely grown under glass. The capital merit of the Safrano is that it will bloom and develop buds at a temperature which is too low for any other Tea Rose. We have seen old plants of this Rose grown out-of-doors in the latitude of New York which have passed through several of our severe winters unharmed, with no protection beyond a thin covering of straw bound about them.

The leading article in the issue of *Gartenflora* for February 15th is the first of a series, written by Dr. Wittmack, on the commercial gardening establishments of the United States. It deals at considerable length and in a spirit of great admiration with the establishment of Mr. William K. Harris, of Philadelphia, who operates twenty-two houses, each one hundred feet in length, and devotes himself chiefly to the growing of Chrysanthemums, Carnations, Palms, Cycads, Araucarias, Indian-rubber plants and ornamental foliage-plants of various sorts.

Private letters from the interior of Plymouth County, Massachusetts, say that there has been much distress among the people there this winter, as, owing to the hard times, there has been no market for the cord-wood and White Pine logs upon the sale of which they largely depend for winter support. Most of the Pine logs cut in this region are used for box-boards; and just now the owners of box-board mills only venture to cut logs from their own lands, leaving the majority of the wood-choppers unemployed, and cutting off the usual revenues of the proprietors of wood-lots.

The *Red Bluff News* states as an example of the possibilities of fruit-growing in northern California that eighteen years ago two cuttings of the Purple Fig were pushed down into the soil at the foot of the Coast Range in the western part of Tehama County, since which time they have had no attention, except protection from stock for a few years. For fifteen years they have borne and grown until now each trunk measures eight feet in circumference, the branches form a dome forty feet high and one hundred and eighty feet in circumference, while

the lower branches, which rest on the ground, have taken root and sent up shoots which are twenty-five feet high.

An Indiana correspondent asks what varieties of Grapes we should advise for home use. There is no general answer to such a question which would apply to all parts of the United States. We are inclined to accept the judgment of Mr. E. Williams, of New Jersey, that for the east the best black grape is Worden; the best red grape, Brighton, and the best white grape, Niagara. The Illinois Experiment Station, from tests made in a location not so remote from our correspondent's home, recommends, in addition to these, Moore's Early for black; Delaware, Lindley and Massasoit for red; Grein's Golden, Elvira and Green Mountain for white. These are all good Grapes and succeed over a wide range of territory.

Writing of Galax aphylla in a recent number of the *Bulletin of the Torrey Botanical Club*, Mr. A. A. Heller says: "We are often surprised at finding coast-plants growing upon the higher mountain-tops of the south, but here is a reversal of affairs. On June 8th this plant was collected about two miles east of Suffolk, Nansemond County, less than forty miles from the extreme coast-line of Virginia," at only about fifty-three feet above sea-level. "According to my own observations in the mountains of North Carolina," the writer adds, "the plant hardly descends to 2,000 feet, and is most abundant at about 4,000, rarely being found much higher. Wherever Galax occurs to any extent there is a peculiar odor, somewhat suggestive of polecats. This odor was very noticeable at the Suffolk station."

More beautiful roses are rarely seen than some cut blooms of Catherine Mermet, which were offered last week at Brower Brothers' at six dollars a dozen. At the same place we also saw the first Trailing Arbutus of the season, as well as some sprays of forced Japanese Snowball, which were very effective. Sweet Peas of extra quality were selling for fifty cents a dozen. Plants of Rhododendrons and Azaleas in flower are abundant, and Hydrangeas in magnificent bloom are just coming on. A few plants of one or two kinds of Erica are so attractive that one wonders why more of them are not grown. Acacia retinodes is now seen as frequently as A. dealbata. Tree Pæonies, forced into bloom, have been occasionally seen in market here before, but they are rare enough to be called novelties, and they make a really beautiful display.

Professor Britton thinks that botanists will be interested to know that the herbarium of Stephen Elliott, upon which he based his *Sketch of the Botany of South Carolina and Georgia*, published between the years 1816 and 1824, is preserved in the museum of the College of Charleston, where it is accessible to students. He says that "it is in a moderately good state of preservation, although some portions of it have been damaged by insect depredations. It contains, besides Elliott's own collections in the region covered by his book, many specimens from Schweinitz, Rafinesque, Torrey, Oakes and Muhlenberg, and from his colleagues, Drs. Baldwin and Macbride and Mr. Gourdin. The representation of material from Muhlenberg is probably more extensive than in any other collection in America, and this is a most important circumstance, because Muhlenberg's own herbarium, in charge of the American Philosophical Society at Philadelphia, is in very bad order, imperfectly preserved and not very easily consulted."

The limited supply of strawberries received from Florida last week, and their generally superior quality, raised the price to sixty cents a quart in the markets, while exceptionally fine berries were offered in the fruit-stores for as much as seventy-five cents a pint cup. Besides the grapes grown in American, English and Belgian glass houses, which may be had here throughout the year, the only grapes now offered are Almerias, costing from twenty to forty cents a pound, and Catawbas, which are still being forwarded from the interior of this state, and these, although of fair quality, are cheaper now than they were a month ago. California Pears are still held in cold storage, and choice Winter Nelis and P. Barry bring a dollar and a half a dozen, Easter Beurre costing somewhat more. The few King of Siam oranges have a price of their own far in advance of all the other citrus fruits, and two dollars a dozen is asked for them. The markets are now well supplied with a large variety of vegetables, from which no item of the summer supply is missed, excepting sweet corn. California, Mexico, Cuba, Bermuda, Denmark and Africa regularly send fresh vegetables, and large supplies come from Louisiana, Florida and other southern states as the season advances, while every year the market-gardeners in the north are enlarging their glass structures and adding new vegetables to the long list which they already force.

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Lumberman and Forester.

WHEN an American lumberman attacks a forest his aim is to cut and market all the lumber he can profitably handle. Since our original forest-area was practically unlimited it was not reasonable to expect that the men who have felled our forests should regard the future of the woods in which they operated, for when they had finished one tract they could begin work in another. Naturally, the American lumberman has developed great skill in handling forest-products, and since nothing has been allowed to stand in the way of his immediate profits, a forest which he has once cut over and abandoned is a picture of desolation. This ruinous work, however, cannot be justly counted blameworthy; it was the necessary outcome of simple, natural conditions, although the waste, as we now look back upon it, has been calamitous. We ought to remember, too, before we pronounce this extravagance criminal that in many parts of the country our agriculture, and in some places our mining, has been carried on after the same prodigal fashion.

The science of forestry, on the other hand, has been developed in countries where the supply of timber has been limited and where it has been recognized as essential that the productive powers of the forest should not be diminished, but increased, if this were in any way possible. Instead of cutting everything which he can market with a profit, the forester cuts only such trees as ought to be removed when their present value is considered in connection with the future welfare of the woods, and the trees which are selected for removal are so treated in cutting and carrying as to do the least possible injury to the young growth that remains. The time has certainly come when this forward-looking forest-policy ought to prevail in our own forests, even where the production of lumber is their only value; but in a case like that of the North Woods, where the importance of the forest as a conservator of the water-supply is paramount, plans for preserving a continuous forest-cover for the future should not be embarrassed for a moment by any considerations looking to immediate revenue from the sale of lumber.

These different attitudes toward the forest assumed by the lumberman and the forester, made the subject of an instructive address by Mr. Gifford Pinchot, at the late Forestry Congress at Albany, and we are glad that the paper has had a wide circulation by publication in *The Tribune* of this city and in other newspapers. Mr. Pinchot showed how the forester, by adapting natural processes to the use of man, could make the forest a permanent resource by successive renewals within reasonable periods, and yet he explained that in order to do this effectually the forester needed the co-operation of the practical lumberman. The forester's duty is plainly to lay out a general plan and to decide as to the location and amount of every year's cut. The trees for cutting should be selected under his supervision, although much of this marking can be done by a lumberman who has received a sufficient schooling in forestry to enable him to grasp the spirit of forest-management. The lumberman's training will enable him to have all transportation facilities in good order and to see that the work of felling is done in accordance with the forester's instructions, and, in short, will enable him to take direct charge of all practical work in the woods. When such sympathetic co-operation between the two crafts is secured, the forester is relieved of the burden of practical details which can be laid on the shoulders of the lumberman, who is the one man with adequate training to carry out his instructions. Meanwhile, the forester is left free to study and devise plans for forest-management on broad, scientific principles.

Of course, Mr. Pinchot believes that restricted lumbering in the North Woods would be better than lumbering without any restrictions, but yet he feels that the twelve-inch limit fixed by the New York law, and of which we spoke a fortnight ago, is not a sufficient safeguard against danger to the forest-cover. The man who buys the stumpage on state lands; even when he does not cut trees as small as twelve inches in diameter, takes little precaution as to the injury he does to the young growth, and Mr. Pinchot has proved in North Carolina that precautionary measures which did not add more than two or three per cent. to the cost of felling and handling trees made an improvement of ninety-five per cent. in the condition of young trees after the old ones were cut down. Under the existing law no provision is made for replacing timber by equally valuable species, and the constant removal of conifers, which are at best making an up-hill fight against the encroachment of the hard-woods, will finally exterminate them, and thus ruin the principal source of revenue which it is possible for the state to derive from the woods for a long time.

A summary of the whole situation in the Adirondacks can best be given in Mr. Pinchot's own language:

In conclusion it may be said that for many reasons the Adirondacks are peculiarly well suited to forest-management. The soil is excellent, from the standpoint of tree-growth, but of little value for any other purpose. The young growth of the valuable species of trees, with the single important exception of White Pine, is always sufficiently, and often exceedingly, abundant. The small proportion of the valuable soft-wood trees makes it possible for forest-management to make, from the very start, almost as large a return in money as lumbering; and the balance must change soon and permanently to the other side of the account. The great interests which are involved in the maintenance of the water-supply are fully protected under forest-management, which is not the case under any form of lumbering, however restricted in the size of the trees which it may cut. The protection of fish and game falls naturally to the forester, whose training and traditions both fit him peculiarly for such work. In all countries where forestry has become established, the functions of forester and game warden are combined. Finally, the general character and very uniform composition of the North Woods are admirably adapted to the operations of forest-management. In other words, Nature's process of handling the forest, which must guide the forester and dictate his methods, needs very little variation to respond completely to all the different demands which, as a civilized community, we can make upon the forest. There is no forest of equal area in this country from the management of which more useful, more immediate, or more lasting and assured results can be obtained.

Botanical Notes from Texas.—XVI.

EAGLE LAKE lies about half a degree west of the ninety-sixth meridian and a little south of the thirtieth parallel. It is about three miles long, and its greatest width is about one-half that distance. Texas and Kansas and the intervening country have no lakes like those of the north and of the east. Along the coast so-called lakes are obstructed bayous, and inland lakes are merely deeply cut portions of former river-beds, or they are "washouts" made at times of unusual floods.

Our little lake is a very shallow body of water. Its origin probably dates from the time when the waters of the Gulf extended up to this point. Old Caney Bayou, now nearly filled, was later its southern extension. A large "draw," as some western people call a usually dry depression that nature has formed in the upland prairies to relieve them of their surplus water, pours into the head of the lake, in times of heavy rains, the drainage of quite an extent of country. The action of the winds and of the waves would naturally limit, as well as deepen, the waters of the lake. The lake is said to be well stocked with fish, and alligators abound in it.

We are now so far eastward that most south-western plants, whose company we have for months enjoyed, have been left behind, though a few of them still keep our company. The waters of the lake at present are mostly hidden by huge forms of *Nelumbo lutea* and of various Sedges and Grasses. In the shallower places forms of *Sagittaria* abound, while *Heteranthera reniformis* fringes the space. A large *Castalia*, with handsome white flowers, abounds in the lake. Whether it be *Castalia ampla* or Paine's *Castalia* I have not yet determined. Either species in Eagle Lake would be widely out of its hitherto reported range. The homely, but interesting, *Nymphæa advena* grows with it, and the peculiar little *Cabomba caroliniana* is common, floating where it can find open water. Its centrally peltate, elliptical, emersed leaves, so different from its large, finely dissected, immersed ones, lead readily to a recognition of the species. Its small flowers are white. I have not seen *Cabomba* elsewhere in Texas.

Saururus cernuus, Lizard's-tail, so common northward and eastward, is here, growing in the water or near it. In shallow water grows commonly a tall pubescent *Ludwigia* with pale yellow flowers. Also in the lake and near it *Mikania cordifolia* (?) garlands with its leaves and flowers tall-growing Button-bush and other shrubs.

In damp places on the near-by prairies the handsome *Cooperia Drummondii* is common, and extending northward into the "Territory." With *Cooperia* there often grows a good-looking plant of distant kin to it, *Zephyranthus aurea*. We should expect to see *Rubus trivialis*, with its trailing stems sometimes twenty feet long, growing near the lake, and *R. cuneifolius* is also here. These species give to Texas people their blackberries. In drier places grows *Petalostemon obovatus*, bearing long thick spikes of yellowish flowers by which the species may easily be known. *P. multiflorus* is also here. The curious *Brunnichia cirrhosa*, clinging by tendrils and ascending trees to a height of twenty or more feet, is not uncommon near the lake. It is a member of the Buckwheat family, and extends northward at least to Missouri. *Cissus stans* is found in great abundance. Its congener, *C. incisa*, bears it company. The leaflets of the last-named species unjoint so readily that it is difficult to make a good herbarium specimen of it—a fact also noticed long ago (see *Synoptical Flora*, vol. i.) The eastern Partridge-berry, *Mitchella repens*, has located near Eagle Lake, and, as some people are said to do on coming to Texas, our plant has dropped its northern common-name and assumed the name of Turkey-berry.

Tecoma radicans is common about the lake. It often becomes a vile weed in the corn and cotton fields of southern Texas. *T. stans* grows rarely in this vicinity. It sometimes manages to get along and prosper with a less number of leaflets than its cousin carries, so it is contented to stand erect without attempting to climb. Its flowers, which in form resemble those of *T. radicans*, in color are yellow. *Cassia occidentalis*, a tropical species, abounds everywhere in southern Texas. It is a strong-growing plant, with an ill odor. It becomes six or more feet tall. The ovate sharply pointed leaflets are borne in four pairs. Its pods curve upward, becoming nearly erect; they contain from thirty to fifty or more seeds. *C. Tora*, also a southern species, is, in eastern Texas, extending through the other Gulf states, a shorter and a handsomer plant than the first-named species, with three pairs of smooth, obovate leaflets, which are sensitive. Its long curved pods contain from twenty to thirty seeds. *Jaquemontia tamnifolia*, an adventurer from the tropics, is so rarely found here that I have seen only a single specimen. It is a member of the

Morning-glory family. Usually low and erect, it is disposed to climb when a support is at hand. The terminal clusters of bluish flowers are involucrate. *Passiflora incarnata* is here, and so are the high-climbing *Berchemia scandens*, *Cocculus Carolinus*, the large-leaved *Smilax hispida*, and *Ampelopsis quinquefolia*, Virginia Creeper. The creeping *Hydrocotyle Asiatica*, like most of its North American congeners, grows commonly in southern Texas. It forms a part of the flora of Eagle Lake. The species is nearly cosmopolitan in its range. Its thickish clustered leaves are not peltate, but are ovate-cordate and an inch or more long. The few flowers are purplish, succeeded by the thick fruit, which is large for the species.

Kansas City, Kansas.

E. N. Plank.

The Earliest Flowering Shrubs.

THE peculiar prevailing colors of the flowers of the earliest blooming shrubby plants must be remarked by every one. Yellow seems the predominant hue, but we have some species in which some form of red is characteristic, and a few in which the blossoms are white. The flowers of most of the very earliest species are individually small, but as they are often very numerous they may be quite conspicuous in the aggregate. Some of these species are of little value from a horticultural standpoint, although individually and structurally they are quite as beautiful as those which are more showy.

Most of these precocious kinds are very simply adapted for cross-fertilization. Among the hardy, very early, yellow-flowering shrubs there is none of such horticultural value as the Cornelian Cherry, *Cornus mas*, not infrequently to be found under the name of *Cornus mascula*. It is thoroughly hardy in this climate, and will thrive in almost any situation if the soil is not sour or water-soaked. Although a native of a large portion of Europe and of northern Asia, and cultivated for centuries, it must be considered as yet an uncommon shrub in American gardens. While usually regarded as a shrub, it may in time assume the proportions of a small tree, fifteen feet or more in height and with as great a spread of branches. It will grow pretty rapidly for a dozen years or more, but later the growth is much slower. Given plenty of room, it will grow into a fairly symmetrical form with little or no pruning, and blossom regularly every year. The umbels of little yellow flowers are borne on opposite sides of the branchlets of two seasons' growth. As the bud-scales separate in the warm spring days, and expose the yellow flower-buds within, the plants have the appearance of being in bloom for a good while before the blossoms are really open and the pollen ripe. Of course, the time of blooming varies with the seasons, but a dry, warm and sheltered position or cold or wet soil and a chilly exposure may make a difference of ten days in the time of opening of buds among plants in the same region. While the plants appear in blossom for some time before any flowers are really open, the following dates refer to the actually expanded petals and ripe pollen as noted in the vicinity of Boston: In 1888 a plant in a rather cool situation bore open flowers April 26th; in 1889 and 1891, on April 13th; in 1890, large plants on the Public Garden in Boston were reported in flower March 15th, and were noted with open blossoms on April 3d in a less sheltered situation, and in 1892 first open flowers were observed April 3d, and were probably earlier in sheltered places. The flowers remain a conspicuous feature for two or three weeks, after which the last of them fade away, and the branches become covered with clean green foliage, which does not seem liable to injury by insect or fungus diseases. I know of no borers which affect the wood, which is remarkable for its hardness and durability. New plants may be most easily propagated by layering and by suckers, and grafting is often resorted to by nurserymen. Seeds usually do not germinate until the second year they are in the ground, and plants raised in this most natural way are much longer in coming to a flowering age than individuals propagated by any one of the modes of division. While the plants are young the flowers are rarely ever fruitful, but as they grow old they produce fruit in more or less abundance, although but a very small proportion of the innumerable blossoms fructify. The fruit is usually of a bright scarlet or cornelian-red color, is somewhat of the size and shape of some of our common acorns, and when thoroughly mature is not unpalatable. On account of the oval or oblong shape of the fruit it is sometimes known by the name of Long Cherry. Flowering buds cut in winter and placed in water in the house will blossom very well in a few days.

The Japanese Witch-hazel, *Hamamelis Japonica*, when first introduced into the Arboretum, gave promise of surpassing all other shrubs in the earliness of its bloom, the buds opening in mild days in midwinter. During the past two or three years,

however, the bloom of this plant here has proved a disappointment, inasmuch as the buds seem to become blighted and brown during the winter and do not properly expand when they are expected to. This trouble may be purely local or unusual, and the plant is well worth testing by all who admire the interesting yellow bloom of our native Witch-hazel in the autumn, and would like to have similar flowers in the very early spring. The plant is perfectly hardy in this climate and requires no unusual treatment to be grown successfully. This year the plant showed some good flowers here on the 12th of March. Like *Cornus mas*, this Witch-hazel is likely to grow to a considerable size and may be called a small tree instead of a shrub.

With the exception of the true Hazels, or species of *Corylus*, which develop their gray and yellow catkins of sterile flowers at about the same time, we have no native yellow-flowering shrub which bears flowers so early as the Leatherwood, *Dirca palustris*. While it may not be called a showy plant, in the horticultural sense, its blossoms are, nevertheless, very interesting, and on good healthy plants are sufficiently abundant to make the little shrub quite attractive, while the buds of many others still appear dormant. It is an unobtrusive little plant of slow growth, of compact bush or miniature tree-like form when grown singly or straggling, when growing among other larger shrubs or under the shade of trees. It is quite as deserving of a place in the garden as the Witch-hazel. At the Arboretum it was noted as putting forth first flowers about April 21st in 1888, April 15th in 1889, April 7th in 1890, on the 13th of the month in 1891 and 1893, and on the 6th in 1892.

Among the earliest flowering shrubs having red flowers, the European *Daphne Mezereum* is probably the best-known and most valuable for the garden. So precocious are its peculiar rose-colored blossoms that some of them may occasionally open in the autumn, some may open during mild periods in midwinter, and the plant may be found showy with bloom before any of the buds of *Cornus mas* have opened. This little shrub is quite hardy here, but sometimes its buds are injured by frequent freezings and thawings, and the blossoms do not develop well. The fruit is of a bright red color when ripe, and it matures by midsummer, when the plants are again conspicuous for a time.

A little Heath, *Erica carnea*, may also begin blossoming in the late autumn, and its small rose-colored corollas keep fresh under the snow, so that the plant is provided with fresh-looking flowers in the very first warm days and with buds which continue to open. This little plant needs some protection in this latitude in order to give the best satisfaction.

Of the early white-flowering shrubs, *Andromeda Japonica* is probably the first to open any of its pretty urn-shaped blossoms, which are borne in large compound pendulous racemes. If exposed to the sun in winter the buds are liable to great injury, so that the plants do best in partial shade, and they should be protected by leaves and evergreen boughs in winter as they cannot be counted satisfactorily hardy in this climate.

Perfect flowers of the Japanese *Andromeda* are larger and more beautiful than those of our native *Andromeda floribunda* of the Alleghany Mountains, which, however, is, on the whole, a better plant for our northern gardens. Its dark evergreen, compact foliage is also much handsomer than that of its Japanese congener. While its flowers are smaller, they are borne in great abundance. They seem scarcely ever injured in winter, and in warm situations the buds are hardly behind *A. Japonica* in opening in early spring. Besides growing from seeds, these plants may be readily propagated by layers, which, if properly made, will form roots and independent plants in the course of a year.

A Honeysuckle, *Lonicera Standishii*, bears a few very early small white flowers, which, although not showy, are interesting for the sweet fragrance which they exhale. The earliest flowers are produced, as a rule, on branches nearest the ground, and they usually expand by the middle of April or earlier. *L. Standishii* is hardier than *L. fragrantissima*, which resembles it in many respects, especially in its blossoms, which are equally early. As these Honeysuckles come into full bloom the first flowers of many other shrubs begin to develop, and the list of early-flowering species rapidly enlarges.

There are several shrubs with inconspicuous flowers which are among the earliest to bloom, and of these the rare little *Corema Conradi*, with small dull purplish flowers, and the native Yew may be mentioned. But the bloom of these is not of much interest to the horticulturist.

There are one or two species of shrubby Willows which show true blossoms quite early, but most of the early species expose their gray catkins long before they are truly in flower,

although in the popular mind the appearance of the catkin is often taken as synchronous with bloom.

Perhaps the *Forsythias* should be mentioned among the earliest flowering shrubs, because the flowers open on the stems which trail on the ground where the buds first feel the effect of the warm sunshine almost as early as those of *Lonicera Standishii*. In this latitude it is advisable to bend over *Corylopsis pauciflora* and cover the branches with soil during the winter, so that its flowering is delayed. In latitudes south of this, where the plant does not require such protection, it makes a profuse display of its pale yellow flowers at the same season.

Arnold Arboretum.

J. G. Jack.

Foreign Correspondence.

London Letter.

CIRRHOPE TALUM ROBUSTUM.—This is one of the most remarkable of the newer tropical Orchids in cultivation at Kew. It differs from other species of the genus in having the pseudo-bulbs crowded close together as in *Odontoglossum crispum*, instead of springing at intervals from a creeping rhizome. It is also remarkable for the extraordinary size of its pseudo-bulbs and leaves, the former being three inches long and two inches wide, and the leaves, which are thick and leathery, a foot long and four inches wide. The Kew plant is a large one, in fine health, but it has not yet flowered. A plant of it flowered, however, last April with Colonel Trevor Clarke, of Daventry, whose nephew, Captain Clarke, had brought it from New Guinea three years previously. The flowers are as remarkable as the leaves, as the following notes from the description published in the *Orchid Review* last year will show: Scape very stout, a quarter of an inch in thickness at the base, bearing eleven flowers and a few undeveloped buds at the apex. Umbel seven inches across; bracts an inch long; sepals about two inches long, greenish yellow, reddish purple at the base; petals half an inch long, paler than the sepals; lip fleshy, recurved, cordate-oblong, nearly half an inch long, with a pair of stout teeth, and colored deep red-purple; column dull yellow. The plant which produced the inflorescence here described had leaves only half as large as those recently produced at Kew, and the scape and flowers may be correspondingly larger. The genus *Cirrhopetalum* has received a fair share of attention in recent years, and of the forty or so species described twenty-five are in cultivation at Kew. The best of these are *C. Collettii*, *C. fimbriatum*, *C. Makoyanum*, *C. Macraei*, *C. Medusæ*, *C. ornaticissimum*, *C. picturatum* and *C. robustum*. They all thrive when grown in baskets suspended near the roof of the hottest and moistest of our stoves.

CYCNOCHES LODDIGESII.—The charm of the genus *Cycnoches* is largely due to the length and shape of the column of the flower, and in none of the species is this character so conspicuous as in *C. Loddigesii*, which flowered at Kew in May last year, and is flowering again now. The plant is like the better-known *C. chlorochilon* in habit, and the raceme, number and size of the flowers are somewhat similar to that species. Their color is, however, quite different, being greenish brown, with blotches of dark brown, and the lip white and yellow, with red spots. The column is about three inches long, gracefully curved in the form of a half-circle, with wings near the apex, which is inflated, and, as was pointed out by Sir William Hooker, bears a striking resemblance to the head of a cobra. The odor of the flower is as pleasant as vanilla. All the *Cycnoches* like plenty of heat and moisture when growing, to be followed by a short resting period in a drier atmosphere.

LELIO-CATTLEYA PITTIANA.—This is a new species or natural hybrid which has lately flowered with Messrs. F. Sander & Co., and is named, described and figured in the *Gardeners' Chronicle* this week. Mr. O'Brien suggests that it is the product of *Lælia grandis* crossed with *Cattleya guttata* Prinzi (amethystoglossa). It was imported from Pernambuco. It has clavate compressed diphyllous stems fifteen inches or more in height; leaves about a foot long and two inches wide; peduncle six to eight inches long,

bearing three to five flowers, each four inches across, in form resembling some of the varieties of *Lælia elegans*; the sepals and petals creamy-white, tinged with rose, and a few dots of crimson; lip three-lobed, the lateral lobes convolute, white tinged with purple, the front lobe an inch and a half wide, broadly ovate, crisped and wavy, the apex recurved and colored rich amethyst-purple. The hybrid origin of the plant is purely conjectural.

STAUROPSIS GIGANTEA.—I have a twelve-flowered raceme of this stately Orchid before me as I write, which I recently received from a collection where this and many other somewhat old-fashioned Orchids receive exceptional attention, and are grown with conspicuous success. It is forty-five years since this Orchid was first flowered in England by Mr. Robert Warner, when the plant was known as *Vanda gigantea*, and although it has been discarded by many in favor of more recent introductions, it is still eminently worthy of a place in every large collection of tropical Orchids. I know a plant a yard high clothed to the base with two series of strap-shaped leathery leaves two feet long, which bears every year a raceme of flowers, each flower two inches across, the segments tongue-shaped, fleshy, creamy-yellow, with pale red blotches, the lip and column comparatively small and inconspicuous. These flowers remain fresh several weeks.

NARCISSUS BROUSSONETII.—This is one of the rarest and most interesting of the species of *Narcissus*. It is scarcely known in English gardens, but I remember reading somewhere that it is successfully cultivated in pots in the United States, and is much appreciated there. A few years ago it was re-introduced to Kew after having been lost to cultivation many years. It flowered, and a figure of it was published in the *Botanical Magazine*, the plants dying soon afterward. Recently a quantity of bulbs of it have again been obtained from Morocco, where it is a native, and another attempt will be made to establish it here. Meanwhile, any information as to its cultural requirements will be welcome. It has long narrow glaucous green leaves, peduncles a foot long, two-edged, bearing umbels of pure white flowers, each over an inch across and remarkable in having the corona almost entirely suppressed. The flowers are fragrant.

SALVIA MACROSTACHYA is a handsome species, which has long been known to botanists as a common plant in South America, but has never been introduced into cultivation till now. Seeds of it were sent to Kew last year from Quito, and the plants raised were grown outside till autumn, when they were lifted and potted. They are now five feet high, with four-angled stems and large cordate green leaves, eight inches by seven inches, the petioles four inches long. The flowers are in large terminal spikes six inches long by three inches in width, the bracts ovate, over an inch long, green, and the flowers an inch and a half long, bilabiate, and colored lilac-blue. The whole plant is covered with fine silky hairs. As a spring-flowering plant for the conservatory this is likely to prove a useful *Salvia*. A figure of it has been prepared for publication in the *Botanical Magazine*.

SAXIFRAGA BURSERIANA.—There is no more charming alpine plant than this when it is grown in pots in a frame and brought into the cool-house in February to flower. In the alpine-house at Kew (which is an unheated span-roofed structure about fifty feet long, with a trellis stage on each side of a central path) there are now many pots of this beside numerous other species of *Saxifraga*, but *S. Burseriana* is far the best of them all. Cushions of gray-green six inches across, thickly studded all over with short-stalked pure white flowers as large as primroses, which last a fortnight or three weeks. No plants are more easily managed; little tufts are potted in spring, after the flowers are over, in loamy soil, and pieces of sandstone are placed over the surface of the soil. To these the *Saxifraga* clings, and in a year or two the whole surface is a conical tuft of gray-green, pretty enough even when not in flower, but a gem among greenhouse plants in February and March.

TRIAL OF NEW PLANTS.—I perceive that there is some slight difference between the work done by your experimental stations and that performed by the Royal Horticultural Society at Chiswick, the only place in England where systematically conducted trials of new garden flowers, fruits and vegetables are publicly conducted for the public good. This year the subjects to which attention will be devoted are the following: The committees which adjudicate at the bimonthly exhibitions of plants are summoned to meet at Chiswick whenever any group of plants under trial are ready to be examined. The results of the trials are reported in the journal of the Society and in the gardening papers. Invitations are sent out to nurserymen and others interested, who are requested to send to Chiswick examples of any plants to be tried. These are carefully cultivated by a staff of gardeners under the direction of Mr. A. F. Barron, the superintendent. From the fact that the trials are open to the inspection of the public the merits of new flowers, etc., are not likely to be overlooked, nor on the other hand can inferior novelties escape detection under such a trial. The following is the official programme: The council of the Royal Horticultural Society has decided to make trials this season of the following subjects in the gardens at Chiswick: (1) By the Floral Committee: *Cannas*, *Clematis*, bedding *Begonias*, tree (perpetual or winter-flowering) *Carnations*, zonal *Pelargoniums* for pots, *Campanulas* and *Sweet Peas*. (2) By the Fruit and Vegetable Committee: *Strawberries* (all sorts), *Cauliflowers*, new varieties *Tomatoes*, new varieties *Potatoes* and new varieties *Peas*. Growers and others interested in these plants, seeds, etc., are hereby invited to contribute examples for this purpose, and to be good enough to forward the same to the Superintendent, Royal Horticultural Society Gardens, Chiswick, as early as may be convenient. Full particulars may be obtained on application to the Secretary, the Rev. W. Wilks, Royal Horticultural Society, 117 Victoria Street, S. W.

London.

W. Watson.

New or Little-known Plants.

Ostrya Knowltoni, a new Species of Hop Hornbeam.

THE Hop Hornbeam of the eastern United States, *Ostrya Virginiana* (Mill.), Willd., occurs from the Atlantic states westward to the Mississippi Valley, and reaches the south-western limit of its range in the eastern portions of Nebraska, Kansas, Indian Territory and Texas. The discovery of a second species of this genus in the United States will be of interest to all American botanists, and the fact of its geographic separation from *Ostrya Virginiana* by a distance of nearly a thousand miles gives this discovery additional interest. In the year 1889 Mr. Frank H. Knowlton was occupied in making a collection of the plants of San Francisco Mountain, in northern Arizona, and spent a portion of his time in a side trip to the Grand Cañon of the Colorado. Mr. Knowlton was in the company of a party engaged in a biological survey of the San Francisco Mountain region under the direction of Dr. C. Hart Merriam. The party reached the Grand Cañon at a point known as Cañon Spring, having traversed the road from San Francisco Mountain by the way of Hull Spring and Red Horse Spring. The southern wall of the Grand Cañon at this point is about 1,800 metres in height, and the trail, which leads circuitously from its summit to the river below, is about ten kilometres in length. This long steep slope is cut up by deep lateral cañons, on the cool northern slopes of which, in their higher altitudes, grow the Rocky Mountain Yellow Pine, *Pinus ponderosa* Scopulorum; the Douglas Spruce, *Pseudotsuga taxifolia*, and the Rocky Mountain Fir, *Abies concolor*. On slopes of southern exposure, and even on northern slopes at lower altitudes, is a growth of small forest-vegetation characteristic of the Upper Sonoran zone of the desert, made up of the Nut Pine, *Pinus edulis*; the Desert Juniper, *Juniperus Californica* Utahensis, and the Mountain Mahogany, *Cercocarpus*

ledifolius. In the vicinity of Cañon Spring Mr. Knowlton obtained a specimen of a tree which subsequently proved to be an *Ostrya*, but which was not at that time in fruit. In 1892 Professor J. W. Toumey, of Tucson, Arizona, botanist

OSTRYA KNOWLTONI, sp. nov.—A small tree about 4 metres in height; bark of twigs, two years or more old, light gray in color, those one year old cinnamon-brown and glabrescent, those of the current season greenish brown



Fig. 23.—*Ostrya Knowltoni*.—See page 114.

of the State University, visited the same locality and obtained fruiting specimens of this tree, which in January, 1894, came into the writer's hands. A technical description is here given:

and pubescent; leaves with densely pubescent petiole 4 to 10 mm. in length, the blade broadly oval in outline, obtuse or broadly cuneate at base, acute or in some specimens obtuse at the apex, dentate-serrate, sometimes doubly so,

sparsely pubescent on both surfaces; flowers not seen; fruiting spike ovate to oblong, 2.5 to 4 cm. long, the mature involucre about 2 cm. long, bristly hairy at their insertion; nut ovate-lanceolate, acute, about 6 mm. long, several-nerved on both surfaces, minutely pubescent until full maturity; male spikelets for the succeeding year borne in clusters of 2 to 4 on a pubescent peduncle 5 to 10 mm. long. Type specimen in the United States National Herbarium, collected July 10th, 1892 (No. 272), in Yavapai County, Arizona, within the Grand Cañon of the Colorado River, by J. W. Toumey.

Mr. Knowlton obtained only a single specimen, collected September 10th, 1889, and without fruit, but bearing leaves and the male catkin-buds for the succeeding year. By a microscopical examination of the catkin scales and anthers, when naming the plant collections of the party, I was able to refer the tree definitely to the genus *Ostrya*, and it was recognized at that time as an undescribed species. The material was so scant, however, that a description was temporarily withheld, but Mr. Toumey's specimens bear mature fruit and render possible a better comparison with *O. Virginiana*. The leaves in *O. Knowltoni* are smaller, approximately oval, obtuse or acute, and rarely cordate below; in *O. Virginiana* larger, oblong-lanceolate, acuminate, and usually with a shallow sinus at the base. In *O. Knowltoni* three-year-old twigs have a light gray bark, in *O. Virginiana* a dark reddish-brown bark, and, in these specimens at least, the nut of the former species is minutely pubescent, not glabrous, as in *O. Virginiana*. It is probable that the flowers and the size, faces and bark of the tree itself will be found to afford other distinctive characters.

The following communication from Professor Toumey, under date of February 5th, 1894, will serve to direct others to the exact station of the original tree, which is, with little doubt, the same specimen from which Mr. Knowlton obtained his material:

The *Ostrya*, which you inquire further in regard to, and specimens of which were sent to the Department of Agriculture a year ago, was found north of Flagstaff, on the rim of the Grand Cañon of the Colorado River. It is growing at the left, a few rods after beginning the descent to the river over John Hance's trail. The tree is much smaller than its eastern relative and more spreading. I found only the one specimen, which was about twelve feet high, growing with Oak grubs [*Scrub Oaks*] and *Cercis occidentalis*. *Pinus ponderosa* *Scopulorum* at this place is not infrequent. I remember the tree quite distinctly, as I observed at the time that it differed considerably from the eastern species.

This Hop Hornbeam has been named in honor of Mr. Knowlton, not only on account of his valuable services to the science of botany in general, but to commemorate the zeal with which he carried on his field-work of 1889, in spite of continued ill-health.

Washington, D. C.

Frederick Vernon Coville.

Cultural Department.

The Best Varieties of Vegetables.

THE following varieties of vegetables have been selected as the best of their class after a careful trial of as many kinds as were available in a soil of sandy loam. To the name of each variety I have added a few of its points of excellence.

BUSH BEANS, GREEN-PODDED.—Early Red Valentine: earliness, productiveness, good flavor and tenderness. Horticultural Dwarf: large pod, long-bearing season and meatiness of pod. Refugee, or Thousand to One: remarkable productiveness, round solid pods, good for pickles as well as for ordinary table use.

BUSH BEANS, WAX PODS.—Black Wax: earliness, clear color, delicate flavor. Improved Golden Wax: productiveness, tenderness and solidity of pod, freedom from rust. Wardwell's Wax: size of pod, vigor of plant, power to resist drought.

BUSH LIMAS.—Henderson's Bush Lima: earliest and most prolific, fine-flavored, but small. Burpee's Bush Lima: a true bush form of the old White Lima, with all its valuable qualities.

POLE BEANS.—Large White Lima: an enormous cropper, vigorous plant and fine flavor. Old Homestead: early and ever-bearing, large, round, tender pods and peculiarly fine flavor. Golden-cluster Wax: the best of its kind to take the poles, a certain cropper.

BETS.—Egyptian: earliness and rich crimson color. Eclipse: earliness, fine texture of flesh, handsomely zoned and excellent flavor. Long Smooth Blood: finest color of all, tender and good flavor.

CABBAGE.—Early Jersey Wakefield: first to head, most succulent, good color when cooked. Succession: sure heading quality, compact plant, solid head and tenderness. Late Flat Dutch: uniform header, great density, best keeper, fair flavor.

CARROTS.—Early Horn: earliness, cleanness of root, mildness of flavor. Danvers: heaviness, tenderness of core, fine color and flavor. Long Orange: good keeper, good color, valuable for field or garden culture, but must have a deep soil.

CAULIFLOWER.—Early Snowball: sureness in heading, freedom from green leaves in the flower-head, compactness of plant, pearly color. Large Late Algiers: large size of head, hardness, lateness of season.

CELERY.—White Plume: earliness, beauty, crispness, flavor. Golden Dwarf: weight of plant, thickness of stem, keeping quality, fine texture. London Red: unequaled nutty flavor, freedom from strings and the best keeper.

SWEET CORN.—Cory Early: earliness, comparatively large ear, tenderness and sweetness. Perry's Hybrid: second early, good ear, sure and abundant cropper, healthy plant. Stowell's Evergreen: large ear, small cob, fine flavor and tenderness. Country Gentleman: small ear, small but deep grain, incomparable in flavor.

CUCUMBERS.—Early Cluster: fruits in clusters, large cropper, small, chunky fruit, good for pickles. Green Prolific: earliness, medium size, good color, the best for pickles and good for slicing. Early White Spine: enormous cropper, long season, fine texture, delicate flavor, little seed, best all-round variety.

EGG-PLANT.—Early Long Purple: good cropper, long narrow fruit, valued for extreme earliness. New York Improved Spineless: productiveness, vigor of plant, size and color of fruit, solidity and unexcelled flavor.

ENDIVE.—Moss Curled: garnishing quality, tenderness and neat curled habit. Green Curled: largest and densest heart, best for spring and autumn. Broad-leaved Batavian: largest plant, broad thick leaves.

KALE.—Green Curled Scotch: fine close curl, compact plant, best for autumn. Siberian: extreme hardness, mild flavor, can stand out all winter.

KOHL RABI.—Early Short-leaved Vienna: small bulb, very small top, tender, early maturity, can be planted closely, the best for frames. White Vienna: the popular variety, large bulb.

LEEKs.—London Flag: the best for soups, good flavor. Large Carentan: heaviest, best for serving whole.

LETTUCE.—Boston Market: small dense plant, early, delicate flavor. Salamander: ability to resist drought, few outside leaves, large, solid but tender and succulent head. Henderson's New York: largest good variety, does not burn, stands longest without seeding, fairly solid, delicious flavor. Paris White Cos: finest flavor of all, needs to be tied and a moist position.

MUSK MELON.—Jenny Lind: small round fruit, salmon-red flesh, good cropper, best flavored of early varieties. Nutmeg: larger and longer than Jenny Lind, green flesh, early, delicious flavor. Hackensack: heavy cropper, green flesh, fair flavor, the popular variety. Emerald Gem: medium size, deep green shell, good cropper, deep salmon-red flesh, luscious and melting flavor, the best variety for home use.

WATERMELONS.—Cole's Early: the best early for the latitude of New York, medium-sized fruit, delicious flavor. Ice-cream: unexcelled in flavor, fine crimson flesh, small seeds, and one of the surest to fruit. Florida Favorite: large, long fruit, very deep flesh, large heart, thin, tough rind, very prolific.

ONIONS.—Queen: best for pickling, clear waxy-white color, mild in flavor. Early Red Wethersfield: rather flat, large, good keeper, fine flavor. Prizetaker: largest and best for general use, fine globular shape, small neck, solid pulp, delicate flavor and fair keeper. Southport Red Globe, Southport White Globe and Southport Yellow Globe are the very best of their respective colors for keeping qualities as well as in all other good points.

PARSLEY.—Double Curled: sold under various names. Growers should insist on getting seed from good stock, as excellence depends entirely on selection. Emerald: a fine curly variety of the above of a distinct dark green color.

PARSNIPS.—Long Smooth: tapering shoulder, long bulb.

Hollow-crowned: square shoulder, depressed at crown, half-long bulb, very heavy, of the best quality. Short Round: turnip-shaped root, which is rarely used. All the Parsnips I have tested seem to be of about equal value in regard to flavor; a deep mellow, rich soil produces the best roots.

PEAS, in the order of their earliness.—The varieties catalogued as Philadelphia Extra Early, First of All, etc., are selections of the old Daniel O'Rourke type, worked up to various degrees of perfection, every prominent dealer having his own particular stock. The points of merit given apply to the best strains offered by trustworthy seedsmen: Two and a half-feet high, enormous croppers, resist drought well, not wrinkled, but of fair flavor, well-filled pods. American Wonder: one foot, the favorite dwarf variety, densely compact pods, prolific, tender and delicious. Advancer: two feet, second early, vigorous plant, good cropper, admirable flavor. Heroine: two and a half-feet, largest main crop variety, pods five inches long, well-filled with enormous peas of perfect flavor. Champion of England: five feet, the popular tall late variety, very prolific and of good flavor. Telephone: five feet, finest tall late variety, of incomparable flavor. Admiral: three and a half-feet, a promising second early variety, most prolific, small pods literally jammed full of delicious peas.

PEPPERS.—Small Red Chili: small plant and pod, prolific, best for sauces and pickles, very hot. Long Red Cayenne: larger than the above, very pungent, used mostly for pickles. Sweet Mountain: best for mangoes, mild in flavor and a heavy cropper. Golden Dawn: beautiful yellow color, mild, tender, succulent.

PUMPKINS.—Large Cheese: the largest cropper, medium-sized fruit, fine-grained flesh, a favorite for pies and good also for stock-feeding. Calhoun: small variety of the same type, finer-grained in flesh, heavy cropper, the best for pies. Jumbo: the largest variety, sold under various names; it has a delicious flavor.

RADISHES.—Red Forcing: smallest top and tap-root, fair size, bulb matures in twenty-one days. White-tipped Scarlet: best for general crop, good appearance, mild flavor. French Breakfast: olive-shaped, white at base, small tap-root, crisp and sweet. Yellow Summer Turnip: best summer variety, remains solid long, mild flavor. Long Brightest Scarlet: sold under various names, of a vivid scarlet in color, white-tipped at the base and the best long variety.

SPINACH.—Savoy-leaved or Bloomsdale: crumpled leaves, very early, tender and succulent, but runs quickly to seed. Thick-leaved: the heaviest plant, producing large leaves and a dense heart, good for any season, best for fall, very hardy. New Zealand: distinct from the other varieties, growing in bush form and producing thick fleshy leaves all through the season.

SQUASH.—White Bush Scalloped: the best early variety, creamy white, thin shell, fine grain, juicy and excellent in flavor. Bush Summer Crook Neck: fine dry flavor, very prolific. Boston Marrow: best for late keeping, shell orange, very deep dry flesh, good flavor and grand cropper.

TOMATOES.—Lorillard: not the earliest but the first good variety to mature, small rind, very solid fruit, bright scarlet throughout, delightful flavor. Dwarf Champion: strong bushy plant, needing little support, medium-sized fruit, solid, purplish in color. Perfection: best all-round variety, prolific fruit, vivid scarlet flesh, solid, flavor unexcelled, small seed cavity. Ignatum: large fruit, solid and meaty and stands well. Mikado: has corrugated fruit, but very solid, and is one of the heaviest croppers.

TURNIPS.—Red Top Strap-leaf: medium-sized flat bulb, purplish red at the top, white at the base, early, tender, fine-grained. Snowball: pure white, round, early, admirable for the garden. Golden Ball: round, very mild and delicate in flavor and an excellent keeper.

Bloomfield, N. J.

R.

Snowdrops.

A FEW warm days have encouraged the Snowdrops to venture out, and show plainly that even flowers of such hardihood appreciate genial conditions. The bees were very busy among the expanded flowers on Sunday, March 4th, and the borders were a picture of animation. Nature seems to have her forces always ready for action, but it appears strange that these insects in such numbers should so promptly discover a few flowers in an obscure garden. It is evident, however, that the Snowdrops are very attractive to insects, and if one is to grow seedlings of known pedigree it will be necessary to adopt precautions to prevent the exposure of the flowers. Cross-fertilization often occurs in their natural haunts, if one can judge from collected bulbs.

Snowdrops have greatly interested growers of hardy plants during recent years, for, aside from their beauty and especial value as the first flowers of the year, many fine new forms have been introduced to cultivation. There are now some fifty or more quite distinct forms of *Galanthus* in cultivation, though some of these are as yet very rare. The Snowdrops are very simple flowers, and it would seem scarcely possible that so many distinct kinds could be distinguished; yet, while they have a close family resemblance, the varieties are easily recognized, and some kinds are strikingly distinct even to the most casual observer. There are varieties, however, which are only distinct in the time of flowering, as *G. Octobrensis*, a variety of *G. nivalis*, which blooms in October, and *G. Corcyrensis*, a variety of the same species flowering in November. They differ from the type only in having a light glaucous line in the channel of the leaf. Both of these varieties are weak growers with me, as our Decembers are too severe for their foliage. The latter variety flowered feebly this year in January, though one of the bulbs given to a friend flowered at the normal time.

Galanthus Elwesii is the earliest Snowdrop of the year, and may be expected any time in January when the weather permits growth. This species is now well known, and is the largest and showiest kind available—that is, which can be secured readily at a moderate outlay. It does not do well everywhere, but when it takes kindly to its position it leaves little to be desired. As collected it varies considerably in size and form. Good examples have petals from three-quarters to a full inch long, and rather broad. Still larger forms are separated, as the variety Major, and there is a form with short broad petals and a closed or globe-shaped bud known as *G. globosus*. These forms have broader leaves than the type, and seem also more vigorous. The leaves of *G. Elwesii* are broader than those of *G. nivalis*, light green and glaucous. The weak point of *G. Elwesii* is its odor, which is not as agreeable as that of other varieties.

Galanthus Aidin is a new Snowdrop collected last year by Mr. Whittall, to whom I am indebted for my samples. These flowered as early as *G. Elwesii* and are very promising. They vary somewhat in size and markings, as is usually the case with collected Snowdrops. The flowers are usually of fine size, and in many cases have simply dots of green on the lobes and a green base to the inner petals. Their promise, however, is not so much in the novelty of their flowers as in earliness and prolific bloom. Almost every bulb of the hundred or more grown gave me two flowers, and in many cases there were three. In one instance I found a double-flowered scape, the extra flower having four outer petals. I have also found a bulb with a fasciated scape, with two flowers and a remarkable profusion of extra petals, some of which spring from the pedicel. If they retain this habit they will prove more floriferous than any kind yet tested by me. At the same time Mr. Whittall sent me a lot of large, long-necked bulbs as *G. Cassaba*. These were so distinct as to lead to visions of something quite unique in the way of flowers. Unfortunately they were rather soft from being a little unripe. The variety cannot be fairly judged as yet; they evidently will prove superior to *G. Aidin* in robustness and size of flower, but I consider *G. Aidin* the most valuable acquisition. Both of these are probably varieties of *G. Elwesii*. Another of Mr. Whittall's varieties, *G. Ikariae*, from the island of Icaria, has broad green leaves, *Leucojum*-like, with flowers of good size and shape. There is still another Asia Minor Snowdrop with small flowers and narrow leaves, light green, and unlike those of *G. nivalis*. I am also indebted to Mr. Whittall for other specimens which do not yet show striking characteristics, but prove that Asia Minor is rich in Snowdrop varieties. Another Asia Minor Snowdrop sent out by Dammann, *G. robustus*, is a noble variety, well named. The bulbs are large and flower-scapes very strong. The flowers are large, with petals fairly narrow, making a long bud. These are scarcely as pointed as well-grown flowers of *G. Imperati*, which is the Italian form of *G. nivalis*, with highly pleasing flowers larger than the type. The inner petals of these are white, with green markings on the sinus. A large form of this is *G. Imperati Atkinsii*. This is most striking in the border, being the largest-flowered and tallest of the collection. This variety also sometimes has four outer petals and shows a tendency to produce extra inner ones which are not fully developed. Another form of *G. Imperati* is *G. Melville* major, which is a beautiful form of great purity of color. The inner petals of this variety are without lobes and incurved.

Galanthus Scharlockii is a curious little Snowdrop which has green markings on the tips of the outer petals, and the spathe is divided, branching over like a pair of horns. These spathe

valves have the appearance of leaves and are entirely distinct in character from those of other species, which usually roll up from each side toward the centre, and the thickened parts are joined by the thinnest of membranes, which is yet constant. *G. Alleni* is a European species named after the genial Snowdrop specialist. It has extremely broad, slightly glaucous leaves, and is strikingly distinct. This form is supposed to be a natural hybrid between *G. latifolius* and *G. Caucasicus*, and with them is rather late in flowering. The flower is large, pure in color and of fine form. Mr. Allen's seedling, *Charmer*, is one of the most effective of the family; the flowers large, pure in color and of great substance; scapes rather short, and inner section the boldest of any of the varieties. *G. Fosteri* is a broad-leaved species, which has not done well in my garden. This is its third season here and it is weaker than ever. However, it has been well reported upon abroad when grown in good rich garden soil, and probably it needs special cultivation to carry out the promises made for it. *G. plicatus*, the Crimean Snowdrop, has broad leaves, folded at the edges, which gives it distinctiveness, but the plants have not been long-lived with me. The flowers are not specially noticeable, being quite small. *G. Umbricus* is a beautiful Italian Snowdrop, which has pointed buds and great purity of color. This variety is still lagging with a few others. There are two forms of Snowdrops recognized with yellow ovaries and yellow markings. I have lost my *G. lutescens*, so that I am unable to say wherein they differ from the similar forms which are often found among collected bulbs. It is possible, however, that these latter may not retain the livid habit, and their lack of deep coloring is due to some temporary and local cause. *G. nivalis*, of course, is known to all growers of Snowdrops, and a pretty little flower it is, too, which is more than can be said of the double form.

Elizabeth, N. J.

J. N. Gerard.

Currants for Market.—Dr. J. B. Ward, of Lyons Farms, New Jersey, gave his experience with Currants at the meeting of the New Jersey State Horticultural Society, which was practically as follows: He prepares the ground as for Strawberries, since the Currants need rich soil. He applies from forty to fifty tons of manure to the acre, makes the soil fine by thorough harrowing and then marks out the rows with a two-horse marker. For the Fay and Cherry Currants these rows are marked seven feet apart, or for the Red Dutch six feet apart would answer. The Fay grows with spreading branches, and if the rows are not seven feet wide too much hand-culture will be needed the second year. The ground ought to be thoroughly cultivated by horse-power three or four times before the fruit begins to develop, since hand-labor is so expensive as to lessen the profits. The plants are set about five feet apart in the rows, where it makes little difference if the plants meet each other. The first application of hellebore, which should be made early and thoroughly, will generally destroy most of the Currant worms, so that a light application once or twice later will thoroughly eradicate them. The hellebore is usually put on dry with a bellows on a damp day. After a shower this must be repeated. "We do little trimming until the third year, when we cut out the old wood so as to leave the best growth, and we repeat this every year. Sometimes we fail to get full clusters, a loss which we attribute to cold winds and damp weather at the time the fruit is setting. When several days of cold, damp weather come about the time the Currants are in bloom, some of the blossoms will blast and the fruit-clusters will be shortened for from one-quarter to one-third of their length. In sheltered places we have obtained long full stems. With proper care a Currant-bush will last ten years and yield from three to five quarts a year. We have grown Fay's Currant entirely, although I would recommend the planting of some Cherry Currants, as well as Versailles."

New York.

S.

The Earliest Flowering Shrubs.—The first of our shrubs to flower this year is the *Daphne Mezereum*, which we have in both pink and white colors. There is a honeycomb-like scent to the blossoms, which is very agreeable. Sometimes we have warm spells in midwinter or later, which bring along the flowers of *Jasminum nudiflorum* ahead of everything else. But the *Daphne* is first this year, as, at this writing, the first flowers only of the *Jasmine* are expanded. The *Chimonanthus fragrans* has been blooming more or less for some time past. Like the *Jasmine*, *Lonicera fragrantissima* is often in bloom in midwinter, but at this time, March 12th, it is not out yet. In the herbaceous border, *Eranthis hyemalis* is in fine bloom, and in the open fields *Draba verna* and *Lamium amplexicaule* make a good display.

Germantown, Pa.

Joseph Meehan.

Correspondence.

A Plea for Wild Flowers.

To the Editor of GARDEN AND FOREST:

Sir,—The importance of protecting our forests, wild game and native song-birds is no longer questioned, but the work begun in these directions should include the preservation of beautiful, curious and useful plants indigenous to our woods and fields. In many instances those who could prevent their destruction are indifferent to the rapid disappearance of wild flowers. Among the forces active in this extermination are the woodman's axe, the drainer's spade, the farmer's plow, the herdsman's sheep and the collector's trowel. There are other causes of, perhaps, minor importance, which are of too much significance to be entirely ignored. To a more enlightened public opinion, the establishment of Arbor Day and to wholesome legislation we must trust for the preservation of our woods and of the lowly plants that only thrive under their shade. If the farmer's mind were enlarged by broader culture he would spare a few rods of swamp-land as nature dressed it. The Lily would then be allowed to brighten the fence-row, and the Clematis, with its feathery plumes, might be left to drape his fences without subjecting the owner to the charge of shiftlessness. As sheep graze much closer than any other domestic animal, they are peculiarly destructive to plant-life. In many instances they are allowed to graze in woodlands with other stock when they might as well be kept in other pasturage.

The species of wild plants which disappear most rapidly are those possessing, or supposed to possess, medicinal qualities, as the Blood-root, Sarsaparilla, Orange-root and Ginseng. Professional root-diggers gather supplies each succeeding year from the same section as long as the yield is profitable. When they have so nearly exterminated the plant that the gathering no longer proves remunerative, new fields are sought in which to repeat their depredations. It is stated that Ginseng can be cultivated successfully, and the production of Ginseng may yet become a paying business. Many other wild plants also admit of cultivation. I heard complaints last Decoration Day that plants, such as the Trillium, once plentiful in this locality, are now almost exterminated by overgathering. Plant-collectors are charged with being largely responsible for the extermination of wild flowers, and this is, perhaps, true in a way. But, after all, collectors are among the most active agents, indirectly, in perpetuating them; among town and city people by giving an opportunity to buy them, and among country people by awakening them to the fact that native plants are worth money, and, consequently, worth keeping; for many people see no value in anything excepting the cash value.

If wild flowers are to be saved from extermination the people must be educated to understand their beauty and usefulness. Natural plantations in city parks make their value known, and the florist, who is each year adding new species to his stock of native plants, is also a teacher. But there is, perhaps, no better way in which to reach the masses than through the country schools. Teachers should call attention to the marvels of plant-structure and plant-life, and Arbor Day exercises should not be called complete until a bed of wild flowers is made a part of the decoration of the school-yard. The daily study of the plant, its habits and development, will prove an efficient aid in the advancement of elementary science; a source of inspiration that will purify and make nobler the lives of all who come within its influence.

Harmansburg, Pa.

B. L. Putnam.

March in a West Virginia Garden.

To the Editor of GARDEN AND FOREST:

Sir,—The first work here in the garden in March is to remove the leaves that have been its winter protection. This is an interesting process, as it reveals the wet yellowed grass, which a few days of warm sunshine will turn to green, and the groups of early-flowering bulbs already piercing the mold. The first week of bright, genial spring weather has brought all the early birds. The air is jubilant with the whistlings of the cardinal grosbeak, the chirp of robins and the songs of Carolina wrens, snowbirds, crested titmice and the sparrows. The far-away notes of doves and the call of meadow-larks add a touch of pathos to the general hilarity. Bluebirds are unusually plentiful, and blackbirds have come in full force. Watching the signs of the times, year after year, I have never known the blackbirds to make a mistake in coming too soon, so we take heart of grace and begin to believe that spring is really here.

The warm sun has brought out the Crocuses in royal raiment of purple and gold. Snowdrops in colonies almost sparkle in their pure whiteness here and there amid the gray-green grass, and yesterday one lonely butterfly was flitting about searching for companions and for flowers.

Jasminum nudiflorum has been blooming all winter, yet has kept a store of sunny blossoms to welcome the first week of spring. The earliest fragrant flowers to perfume the winds of March in our garden are those of a Bush Honeysuckle, *Lonicera Standishii*, which has inconspicuous cream-colored inflorescence coming before the leaves. A group of Japanese Cherries, and another of Flowering Plums are now very interesting, only waiting a few more hours of sunshine to expand their blossoms. The first Periwinkle-flowers stud the lawn, and double Daffodils are laughing in the warm light from their shelter at the feet of a Snowball-bush.

Some Willows show a golden mist, and the Weeping Willows are a faint yellowish green. The bees are released from their winter quarters, and are getting their first taste of fresh bee-bread from the bakeries provided by the Aspen, the pussy Willows and the catkins of the Alders.

Shepherdstown, W. Va.

Danske Dandridge.

Notes from a Northern Garden.

To the Editor of GARDEN AND FOREST:

Sir,—The subtle changes which awaken vegetation in this latitude are always interesting and mysterious. The winter season here has been a mild one compared with that of last year. On the 24th of February the thermometer dropped to nine degrees below zero, the lowest point reached thus far during this winter. The next day the wind veered to the south and the weather became decidedly milder. On the 27th of February the first Snowdrop hung out its tiny bell. This was soon followed by others, so that in a few days there was quite a patch of them.

Thus far the weather is remarkably free from March bluster, so that a good many shrubs, bulbs and perennials are beginning to awaken. Jonquils, Hyacinths, Tulips and Daffodils push bravely upward. Crocuses are already quite far advanced and will blossom in a few days. The leaf-buds of the White Lilacs are almost ready to burst, and the rich yellow flower-buds of *Forsythia Viridissima* and those of *Spiræa Thunbergii* are beginning to expand. Among the more prominent perennials which have already made leaves are *Dicentra spectabilis*, Oriental Poppy and *Aquilegias*.

Last November I sent a few notes to GARDEN AND FOREST (vol. vi., p. 498) describing plants blooming in our garden in mid-November. Had hardy Chrysanthemums been growing there the time might have been extended to Thanksgiving, for a fine specimen of a yellow Chrysanthemum in a neighbor's garden defied the storms of late November. From this year's experience with Snowdrops, it is evident that these flowers, in a favorable season, would be in bloom in the latter half of February, and in sheltered situations, with a southern exposure, probably as early as the middle of the month; we can thus have out-of-door flowers in all but two months of the year, December and January. A little judicious management will provide flowers for three hundred days of the year's calendar.

Overlief, Mich.

H. A. Fortune.

Recent Publications.

Richard Jefferies: A Study. By H. S. Salt. Swan, Sonnenschein & Co., London; Macmillan & Co., New York. 1894.

The publication of this little monograph in the Dilettante library, and the issue at the same time of a "large-paper" edition with illustrations of "Jefferies' Land," would seem to indicate that the interest in Jefferies' unique personality shows no signs of abating. Perhaps it is to be expected that the mere thought of that return to nature which is the key-note of his philosophy should appeal with peculiar charm to a world weary of the burden of a civilization, the advance of which knows neither rest nor pause; for it is with the world at large, as with Jefferies himself, the true message of the country can be learned only through life in the city. It was the banished Duke and his worldly courtiers who felt the poetic aspect of life in the forest of Arden. To the natives of the soil, who feeling the full penalty of

Adam were forced to earn their bread by the sweat of their brows, life in the forest probably seemed prosaic enough.

Though Mr. Salt's study of Jefferies is evidently a labor of love, it will appeal chiefly to those admirers of Jefferies who regard as preface-work the picturesque descriptions of country-life, or the poetic interpretation of the familiar beauty of the fields and hedge-rows, which constitute the chief charm for the ordinary reader. Mr. Salt finds the highest manifestations of Jefferies' genius in the impassioned utterances of *The Story of My Heart*, which seems to him the mystic prelude to a fuller revelation of the Divine than has ever yet been given to a mortal. It is a pity that a genuine appreciation of the work of one who, in his nobler moods, wrote as if under the direct inspiration of Nature herself, should so soon degenerate into a cult, for, when this calamity falls upon an author, the weaknesses of character and flaws of workmanship which the kindly critic would wish to ignore, are brought prominently forward and dwelt upon as the qualities most worthy of study and admiration. Such has been Jefferies' fate.

In the first essay, "Jefferies as Man," Mr. Salt touches lightly upon the incidents of his outward life, and dwells at length upon his long struggle with "the three grim giants, disease, despair and poverty," which was borne so heroically until death came to his relief. In proportion as we feel the pathos of this brave struggle with an untoward fate, we resent the insinuation that Jefferies' genius was due to his mysterious disease; that he was, in fact, a marked victim of hysteria, "which," in the language of his American physician, "if it has its debasements, has also its exaltations," and "as there was one apocalypse on the island of Patmos, so there was another on the silent hill-top at Wiltshire, and both are alike incomprehensible." But though the inner meaning of the apocalypse at Patmos may be incomprehensible, its glory lies in the vision of the tree of life, the fruit of which is for the healing of the nations, while the one recurring note of Jefferies' revelation is deep and passionate regret that he cannot absorb into his own soul all the life and beauty and joy which he feels throbbing everywhere throughout the universe. It is but Faust in a new form, a passionate protest against the limits of the finite. No sane man wastes his strength in beating against the bars of the prison-house. He finds both the power to rest and the power to work through wise submission to the laws which govern nature and human life. It is only the weak man who glories in revolt. We agree with Mr. Salt in thinking that the feverish unrest and morbid craving for sensation, which are the key-note of the story, were due to the weakness engendered by illness. The strength and sanity of his genius are manifest in the series of essays which he contributed from time to time to the English magazines. In these word-paintings of country-life we find a richness and depth of coloring, combined with a warmth and delicacy of expression, possible only to one who holds his gift in subjection to the rules of art.

As a man he never acquired that calmness which was his ideal of nature. Here it is interesting to contrast him with Thoreau, with whom he had much in common. Thoreau's constant delight in nature owed its strength and intensity to self-discipline, Jefferies' to self-abandonment; hence the one found peace and happiness in the contemplation of her beauty, the other that turmoil and unrest which too surely follow the intoxication of passion.

In Mr. Salt's estimate of Jefferies' gifts as naturalist and as poet-naturalist we heartily coincide. In his chosen field Jefferies has no rivals and few equals, and we can well believe that his descriptions of the fauna and flora of his native country will have a permanent historical interest, such as attaches to White's *Selborne*.

Mr. Salt's manual is furnished with a complete bibliographical appendix, in which the reader will find, not only a list of Jefferies' publications, but a catalogue of all the books and critical reviews of which he is the subject.

Notes.

The beautiful Crape Myrtle, *Lagerstroemia Indica*, is reported by Mr. J. K. Small as now well established in Georgia, about Stone Mountain, in De Kalb County, where it blooms at an elevation of 1,000 feet about the second week in July.

Besides the original importation of the new *Cypripedium Charlesworthii*, 500 plants were lately offered by Hugh Low & Co., while another lot has already been distributed by the Messrs. Lewis, so that we may expect that the plant will be flowering extensively during next season. Orchid-growers will watch it carefully for distinct varieties.

We have received a photograph of an exceptionally well-flowered *Angraecum sesquipedale*, grown at Talbot House, in Edinburgh. It is a single, unbranched plant with ten pairs of leaves and eighteen perfect flowers, all fully open. This grand Madagascar Orchid is said to be badly affected by the winter fogs around London, otherwise it is not a difficult plant to manage.

Unusually warm and bright weather have made the past week a trying one for florists who were preparing plants to be in their best bloom at Easter. The plants have come on so rapidly that it is difficult to keep them back by any ordinary devices for shading and the admission of cool air. In some cases the plants have had to be hurried into market, and florists' windows of this city are now exceptionally beautiful.

In some small towns in the south-western states planks from twelve to twenty inches wide are laid flat on the ground, end to end, to serve as sidewalks. Almost any kind of wood lying on the damp earth with its upper face exposed to the hot sun will soon curl up, but the *Southern Lumberman* asserts that planks of Bald Cypress which have been treated in this manner show no depression when tested by a straight-edge, except that which is due to the wear from the feet of pedestrians.

Mr. Albert M. Herr writes to the *American Florist* the timely advice that with the coming of bright spring days all the ventilation that is possible should be given to Carnations. It will pay in houses that are not arranged for ventilation both at the top and the sides to take out every alternate glass near the bottom and arrange so that it can be quickly put back. A free circulation of good fresh air all around is essential in mild spring-like days if Carnations are to be kept in a vigorous blooming condition.

In the second paper on the History of Orchid Cultivation, contained in the last number of the *Orchid Review*, among other interesting facts it is stated that our North American *Orchis spectabilis* was introduced into England by Francis Masson in 1801. The Rattlesnake Plantain (*Goodyera pubescens*) appeared there a year later and is credited to the Duke of Kent. *Calypso borealis* and some of the *Habenarias* were introduced three years later, and the odd little Ram's Head Lady Slipper (*Cypripedium arietinum*) was introduced in 1808.

Recent arrivals of California oranges have not been in satisfactory condition, but they now command good prices, since the end of the Florida season is in sight. There are no first-class Navel oranges now to be had here, and the last Tangerines of the season are of inferior quality. A few Mandarins are coming from Italy, although the supply of oranges from the Mediterranean ports is considerably smaller than it was at the corresponding season last year. Prices generally rule higher than they have done. For the first time this season good Florida oranges have commanded five dollars a box.

With a view to suggest some practical way of overcoming the difficulties which many growers find in cultivating *Phalænopsis*, Mr. W. T. Lefebvre writes from the Java Botanical Gardens a letter, which is published in a recent number of the *Gardeners' Chronicle*. From a large experience in cultivating these Orchids and studying them in their wild state, Mr. Lefebvre sends the following hints: In places where *Phalænopsis* is abundant the temperature never exceeds seventy-five degrees at night. Most plants bloom from October till May, and some do not stop flowering at all during the dry months. The trunks to which their roots cling are amply mossed and the atmosphere is moist. A single handful of rotted leaves, bark, etc., is sufficient for a whole group. They are partially shaded for a few hours daily in the morning, and they bear sunshine very well.

Since the fires which have raged among the Exposition buildings and the general dismantling of the place, Jackson Park has

become something like an extensive ruin. We are glad to learn that Messrs. Olmsted, Olmsted & Eliot have been engaged to make a design for restoring the grounds to their original use as a city park. Many years ago, Messrs. Olmsted & Vaux made a design for Jackson Park which was never carried out, and since the Art Building will probably remain as a permanent feature, while the excavations for the lagoons and canals for the Exposition were necessary departures from the original plan, it is probable that the new design for the park will differ very essentially from the one first made.

An English correspondent writes to complain that *Caladiums*, *Gloxinias* and *Crotons* are spoken of as "greenhouse plants" in American horticultural journals. It is true that we use the term greenhouse in a more general sense than it is used in England, where it is only applied to the cool house, or, as it is sometimes called, the temperate house. The term warm greenhouse is used in England as the equivalent of intermediate house, that is, a house whose temperature is between that of the tropical and temperate houses, but it is never applied to the tropical house or stove. In this country the term greenhouse often includes all glass houses in general, and when this fact is understood no confusion need follow, for whenever it is necessary to make the distinction the special names of tropical house and intermediate house, etc., are used.

At the meeting of the New Jersey State Horticultural Society last winter, Mr. Charles L. Jones, the Treasurer, in speaking of the profit of quince-growing, said that in a small way he had grown this fruit for twenty years with excellent success, and had experienced no trouble with borers or with fungus diseases. Until three years ago he gathered from six to eight baskets from each tree, and then the curculio attacked them, and he has not been able to overcome this enemy. Every quince has been taken. This year he did not get a dozen good ones. The market is very limited, and although they have been sold at times for from \$4.00 to \$6.00 a hundred, this winter they could have been purchased for any price that was offered. There is very little demand for quinces except for preserving and making jelly, and it does not seem advisable for any one to plant them in large quantities.

At the beginning of the fifteenth century the Rose appears to have been in extensive cultivation. Sir William Clopton granted to Thomas Smyth a piece of ground called Dokmedowe, in Hausted, for the annual payment of a Rose to Sir William and his heirs, at the nativity of St. John the Baptist, in lieu of all services, dated at Hausted on Sunday next before the Feast of All Saints, 1402. In explanation of this deed it may first be observed that ancient deeds are often dated on a Sunday, being executed in churches and churchyards for the greater notoriety; in the second place, the Rose was then in much more extensive use in cultivated society than it is now, when its place is partly occupied by the great variety of other flowers now in cultivation. The demand for Roses was formerly so great that bushels of them were frequently paid by vassals to their lords, both in France and England. The single Rose, paid as an acknowledgment, was the diminutive representation of a bushel of Roses; as a single Pepper-corn, which is still a reserved rent, is of a pound of Pepper-corns, a payment originally of some worth, descending by degrees to a mere formality.

Last year the National Rose Society of Great Britain, in revising their catalogue, formed a new class of Roses under the title of Hybrid Teas. Among the principal varieties which have been removed from among the Hybrid Perpetuals and are now classed as Hybrid Teas are Augustine Guinoisseau, Captain Christy, Caroline Testout, Cheshunt Hybrid, Danmark, Duchess of Albany, Grace Darling, Gloire Lyonnaise, Gustave Regis, Kaiserin Augusta Victoria, Lady Henry Grosvenor, Lady Mary Fitzwilliam, La France, Reine Marie Henriette and Viscountess Folkestone. There seems to be much diversity of opinion among rosarians as to this new classification. Some of them insist that a strict definition of a Hybrid Tea should be given. They ask whether it makes any difference, when there is a cross between a Tea Rose and a Hybrid Perpetual, which one is the seed parent and which the pollen parent. They ask how large a proportion of Tea blood is necessary to make a Hybrid Tea. As to La France, for example, they ask for some definite knowledge as to its parentage, since it does not resemble a Tea Rose in wood or foliage. Certainly, there are difficulties to be met in this classification, and yet the class of Roses which have been produced by directly crossing Hybrid Perpetuals with Teas, no matter which one may be the seed parent, seems to deserve some distinct name.

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Easter Flowers.

IF there is one festival at which the use of flowers would generally be considered more appropriate than at any other, that one is, undoubtedly, Easter; and of all the flowers used the white Lily, as it is the chosen emblem of purity, would justly be the favorite. Indeed, all through the art and poetry of the Middle Ages and of more modern times the Ascension Lily, *Lilium candidum*, has been adopted as the symbol of innocence. Although the Rose and other flowers have been dedicated to the Blessed Virgin, the earliest pictures show her with a vase of Lilies by her side, and the Angel of the Annunciation is almost always pictured with a Lily-wand in his hand. No Lily is more beautiful than this oldest and best-known of all those which have been cultivated; but Easter is, of course, too early for it out-of-doors in this climate, and it loses its distinctive beauty when forced, so that the Japanese *Lilium longiflorum* and the Bermuda or Harris Lily, generally considered a variety of the same species, have largely supplanted it. The Calla, too, which, although it belongs to an entirely different family of plants, has often been called upon to do duty as an Easter Lily, has been largely thrust aside. What has long been known as the Lent Lily in England, is the garden Daffodil, and, undoubtedly, it has received this name, as did the Pasque flower, *Anemone pulsatilla*, on account of its period of bloom; but neither of these has gained any special prominence as an Easter flower in this country. Bermuda Lilies outnumbered all other plants that were blooming in this city at Eastertide this year. In some other cities, where taste is more critical, the true *Longiflorums* are in greater demand than the Harris Lilies, and they really are more handsome and desirable. A large importation of cut Lilies came to this city from Bermuda on the week before Easter, and thousands of them were sold by several firms of dry goods merchants; but, although they were shipped with the greatest care, their yellow foliage and drooping flowers marked them as quite inferior to the home-grown plants.

Of course, there are fashions in Easter flowers as in everything else, but the changes are comparatively slow. A dozen or more years ago, in the adornment of churches,

so-called set pieces were largely used, and much art was expended upon the illumination of texts of Scripture in floral letters. Nothing of this kind is seen now. Indeed, in a large proportion of churches even the arrangement is not entrusted to professional decorators, but the plants in bloom and cut flowers are purchased or hired, and the arrangement is made by some members of the congregation who have special talent in this direction. Twenty years ago individual churches spent more money, perhaps, than they do now, but the custom has spread so that whereas few churches, except those of Catholics and Episcopalians, were formerly decorated, now almost every house of worship in the city makes some effort in this direction. In these arrangements flowers always predominate, Palms and so-called foliage-plants being only used as a background to add to the floral effect.

The churches, however, take but a small portion of the immense quantities of flowers which are produced for this season. A walk through any of the streets will show shop-windows brightened by some pots of Lilies or a plant of Azalea in full bloom. The custom of Easter greeting, too, has become a general one, and, instead of a card or some other favor, a box of flowers or a plant in bloom has become the common gift. Of course, all the ordinary cut flowers of the season are abundant in the market, but it is the season above all others when plants in flower abound. Hydrangeas seem rather less numerous than usual this year, but never before were as many *Cytisus* seen, while their quality was unusually good. Besides the well-known *Cytisus Canariensis*, with its arching branches, and *C. racemosus*, with its more upright habit, we saw occasional plants of the comparatively new variety, *Andreanus*, of *C. scoparius*, and its yellow and chocolate flowers were most effective. A few growers have been bringing on some *Camellias*, with a conviction that it is time for these plants once more to become popular. The so-called Bottle-brush-plant, with its clusters of scarlet stamens, is growing more common, and the large colored flowers of the Tree Pæony are occasionally seen among the white spikes of *Deutzias* and *Lilac*. In one window we observed some *Poinsettias* whose scarlet bracts, though admirably grown, looked singularly out of season. *Anthuriums* and *Amaryllis* are more largely used than they have been where their bright colors are needed.

Of course, great skill is required to bring such a variety of flowers into season on a given day, but every year our growers add to their experience, and mistakes are more rare. The element of chance no longer enters into the business as an excuse for loss or the cause of a lucky hit, for every grower knows just when to start each plant, and how to hurry it on and hold it back, in order to have it in most perfect bloom on Easter morning; and the same skill in growing flowers for cutting, and in keeping them after they are cut, ensures a supply for the unusual demand. In spite of the hard times, prices this year have not ruled low, and, as a rule, growers have received a fair reward for their patience and skill.

LAST week the Lower House of the New Jersey Legislature passed an act instructing the State Geologist, with such expert assistants as may be needed, to make an investigation as to the extent, character and location of the lands in that state which are suited for permanent forests rather than for agriculture. The act provides also that the report of this investigation shall include a statement of the advantages in relation to its timber-supply, water-supply, climate and scenery which would accrue to the state from the establishment of a forest-reserve, and that the lands which seem suitable for such a reserve shall be indicated. The survey is also to determine the extent of the forests of the state which now produce timber of commercial value, and it is to include a study of those areas which are specially adapted to the growth of valuable timber of specified kinds. An examination of the slopes of the watersheds of the state is also contemplated, and the report is to discuss

the effect of a forest-cover upon the maintenance of streams and the regulation of their flow. There is little doubt but that the Senate of the state will act favorably upon this measure, and although the sum appropriated for carrying it out is only \$5,000, an amount which seems altogether inadequate for the proper prosecution of the work, the state is to be congratulated upon making the first step toward establishing a forest-policy. Such a policy ought ultimately to include an organization represented in every township of the state, so that forest-fires could be kept under control and a corps of young men, brought into direct contact with all the woodlands of the state, could be educated in the elements of practical forestry.

Northern New Jersey is a rolling country, much of it broken and mountainous, a country of lakes and sparkling brooks and wooded slopes, and it is a matter of more than local importance that these woods and waters so near to the millions of people who swarm around New York Bay should be preserved. With winter resorts on the Pine levels, summer homes among the hills and a sea-coast of unusual attractiveness, and all these within easy reach of New York and Philadelphia, New Jersey has resources quite as productive as her rich mines and fertile fields. The preservation of beautiful lake and woodland scenery, of wholesome and pleasant places of refuge, to which the city-wearied can turn for refreshment, is certainly demanded by the enlightened self-interest as well as the broad public spirit of the citizens of that state.

A Garden of Irises.

OF the flowers which chiefly appeal to the poetic feeling of the Japanese, and move their admiration and enthusiasm, the Iris comes fifth on the list in its time of flowering. Earlier in the year the Mume, the Cherry, the Pæony and the Wistaria have each in turn enjoyed their fêtes. Early in June the Iris has its short period of splendor, and then gives way to the Convolvulus, the Lotus, and finally to the Chrysanthemum, which closes the Japanese floral calendar.

Among the comparatively small number of plants to which the Japanese have devoted themselves with the view of increasing the beauty of their flowers, the Iris certainly represents their greatest achievement. Other plants, much cultivated in Japan, and greatly changed by cultivation from their original forms, like the Pæony and the Chrysanthemum, are of Chinese origin, and were cultivated in China for centuries before their introduction into the Mikado's empire. But the Iris is a Japanese plant; and if the species (*Iris lævigata*) that is cultivated in Japan grows also in China, which is probable, it is not, so far as we have been able to learn, a favorite garden-plant, like the Pæony and the Chrysanthemum, in that country. By perfecting the flowers of this Iris, and by raising the splendid varieties with which we have become familiar here in America during the last ten years, the Japanese have made a distinct and valuable contribution to the æsthetic equipment of the world, which should in some measure, at least, atone for the horticultural monstrosities with which they have inundated us.

The Iris, although its flowering makes a fête in the capital, is much less generally cultivated throughout the empire than several other flowers. A corner of low ground is sometimes reserved for it in large gardens, but its moisture-loving constitution, and the fact that it only produces its best results when grown under special conditions, make its general cultivation difficult and unsatisfactory.

The great centre of Iris cultivation in Japan is the comparatively small garden, of which a photograph is reproduced on page 125 of this issue, where the best varieties imported from Japan have been raised. It is situated in Horikiri, a suburb of Tōkyō, largely given up to small florists' establishments, and reached by the avenue of Cherry-trees in Mukōjima, which in April, when the trees are in flower, is counted one of the chief sights of Japan.

The Iris garden occupies an irregular-shaped basin, surrounded by artificial mounds planted with evergreen trees, and affording at different points opportunities to look down upon the flowers from open summer-houses. Near the middle of the garden stands the tea-house, which is found in every Japanese garden, large or small, where visitors are refreshed with small cups of straw-colored tea and sweet cakes. Near the entrance is a large shed, which appears in the centre of our illustration, where the workmen live and plants are packed to send away. The remainder of the level surface, perhaps half or three-quarters of an acre in extent, is divided into irregular-shaped small beds, divided by narrow walks, raised about eighteen inches above the general surface of the ground. The plants are set in the beds in straight rows, three feet apart, and are arranged according to the colors of the flowers, each row being made of plants bearing flowers of the same colors. The rows are also arranged in the beds according to the color of the flowers, from the one with the lightest-colored flowers at one end, to that with the darkest-colored flowers at the other. The sunken beds permit the flooding of the plants during their period of active growth, and during the summer the surface of the ground, which is covered with a thick layer of night-soil, is kept so wet that it would be impossible to walk dry-shod through the garden without the raised paths.

It is not improbable that the limit of perfection in the flowers of the Iris of this particular species has been reached in the Horikiri garden. Certainly, none of the varieties which have been raised in the United States or in Europe equal its standard types in perfection of form or in brilliancy and delicacy of coloring.

How our Conifers have Wintered.

THE intense cold of the last week in February, followed by the sudden heat of March, has injured the little Conifers that have been struggling for an existence in a wind-swept shrubbery through several dry summers and autumns. Unless the ground is well filled with moisture before it freezes up for the winter the roots of these trees cannot honor the drafts for water which the leaves and branches make as they dry out in the wind. This year White Spruces have suffered severely, and young Norway Spruces, planted last summer in a spot where they could not be constantly watered, seem to be quite dead, in spite of a mulching of strawy litter in the autumn. The tips of Hemlock, not in moist places, always turn brown in the March sun and remain in a discouraged condition until late in May, when they seem to pull themselves together and take a fresh start. Even some of those on the north-west corner of the house, where they are not much exposed to sunshine, look as if their upper branches were entirely dead. The Carolina Hemlock does better with us under the same conditions than the native tree. One that was moved last summer shows a suffering top, but the one which remained undisturbed is green and vigorous. It is a beautiful little tree and a rapid grower, even in the dry location where it has to stand.

As to Pines, they are always a hopeless-looking lot in early spring and have a distressed and wilted air which looks like a protest against the climate. The foreign evergreens, on the contrary, bear up well, and the delicate Japanese Cypress, the *Chamæcyparis* and the *Retinisporas*, maintain a vigorous appearance, which is a reproach to their lackadaisical and discontented Puritan cousins. Why should Pines and Junipers, born beneath these vigorous skies and exposed from infancy to the stony soil and bitter blasts of a New England pasture, sulk and misbehave in a cold winter, when a Japanese tree, apparently a much more delicate and pleasure-loving Conifer, used to a politer climate, can brace up and make no fuss at all?

Is it the old contrast between the thorough-bred and the scrub, a certain adaptability and elasticity under new

conditions which the higher type displays through adverse circumstances which dishearten the simpler product?

In the dearth of green things, it is interesting to walk abroad in the hill-pasture and watch the seedling Pines which dot the brown grass. A seed that takes six years to become a tree six inches tall is an object to be regarded with respect, and this section of the infant forest we look upon with awe. It is a monument to patience. Through what hardships have these tiny trees struggled into being, parched with drought, strangled by grass, nipped by fierce sea-winds, scorched by summer suns, pinched by winter cold! Year after year they have dropped and renewed their leaves, hidden from view all through the first part of their precarious existence by surrounding weeds and herbage, till at last, undismayed, they have struck their roots deep and set forth upon their career as visible parts of the universe. Thus Nature works in her secret ways to clothe the barren hill-side with a mantle of living green, and on our hill the gradation of her forest-class is now complete from these minute freshmen to the stately seniors ten feet high, which at a distance make small show, but near at hand have a presence of their own not to be despised.

A group of Austrian Pines, sturdy and dark, gives an accent amid the brighter emerald of the White Pines. On the bleakest part of the hill some little Scotch Pines, with green-tasseled bonnets, are to be seen ready for action, and in a few years they will make a goodly show behind the others. People no longer say, "Where is your forest?" with intent to flatter; but, "Really! your forest grows!" with a shade of respect for its resolution.

Hingham, Mass.

M. C. Robbins.

Foreign Correspondence.

London Letter.

SOBRALIA SESSILIS.—Sobralias are confessedly difficult, and consequently they are confused in gardens. The plant generally grown as *S. sessilis* is not that species at all, but *S. decora*, although it is figured under the former name in the *Botanical Magazine*, t. 4570. The true *S. sessilis* I never saw in cultivation until lately, and it is now flowering for the first time at Kew. It was originally described and figured by Lindley in 1841 from specimens collected in British Guiana by Schomburgk, and the plants now at Kew came from that country, one through Sir John Kirk, who obtained plants three years ago from Guiana, and the other from Messrs. F. Sander & Co., who imported it last year. It is easily distinguished from all other cultivated Sobralias by its leaves being purplish on the under sides and the stems covered with short black hairs. The stems are a foot high, the leaves almost leathery, and the terminal flowers are as large as those of the spurious *S. sessilis*, deep rosy mauve, with a crimson labellum tinged with yellow. It is a pretty addition to cultivated Sobralias.

SPATHOGLOTTIS AUREA, also known as *S. Kimballiana*, is one of the prettiest of the Orchids now in flower at Kew. It was introduced over forty years ago from Malacca by Messrs. Veitch, who describe it as a plant "of considerable interest both to botanists and horticulturists; its large spoon-like cauline bracts are peculiar to it, and strongly mark its specific character, while its flowers are the largest and most handsomely colored in the genus." This is true of the plant now in flower at Kew, the blooms being nearly two inches across and of the purest lemon-yellow color. The species had long ago disappeared from cultivation until 1886, when a quantity of it was imported. It has terrestrial pseudo-bulbs, lanceolate-plicate leaves two feet or more long, and an erect scape two feet high bearing a dozen buds and flowers, with broad obtuse sepals and petals and a three-lobed lip. The flowers have been open a fortnight, and are still quite fresh. The plant is grown in a hot moist house always, and is potted in peat and sphagnum.

SPATHOGLOTTIS PLICATA is another handsome species, of which there are two well-marked varieties, one with rosy

lilac, the other with pure white flowers. Both are cultivated at Kew, where the latter is now flowering for the first time. The pseudo-bulbs are clustered, flattened, about two inches in diameter, and the leaves two feet long, narrow, lanceolate, plicate and bright green. The scape is erect, two feet high, and it bears on the top a cluster of flowers and buds subtended by conspicuous ovate bracts. Each flower is one and a half inches across, with nearly equal ovate sepals and petals and a three-lobed lip, the claw narrow. In the variety the flowers are wholly white, except a tinge of yellow on the crest of the lip. The type appears to be common in Java, Manilla, New Guinea and the Malay Peninsula; the variety was lately imported from Singapore. There is a species in Perak, *S. Wrayi*, which has flowers said to be of the same color as *S. aurea*, but nearly twice as large. It is not yet introduced, but it deserves to be. It is a recent discovery.

IPOMŒA WOODII.—This is a new species of Bindweed which has lately been introduced to Kew from Natal, and which is likely to become a favorite garden-plant. It was discovered in Zululand by Mr. Medley Wood, the Curator of the Botanic Garden at Durban, who sent living examples of it to Kew, and described it as a handsome species with a tuberous root, a perennial woody stem, handsome, heart-shaped, purple-tinted leaves six inches long, and short-stalked clusters of large, handsome, bell-shaped, rosy purple flowers. The plants at Kew are growing freely, and they look likely to flower this year. Mr. Wood saw specimens with stems forty feet long, "the naked stem lying on the ground and producing a quantity of fine foliage." This suggests something in the way of *I. Batatas*, commonly known as *Batatas paniculata*, one of the most widely distributed of all *Ipomœas*, and one of the very best of all summer climbers for the warm-house.

WILDENIA CANDIDA.—This is an interesting and pretty little Commelynaceous plant which was discovered by Hartweg in the crater of the Volcan de Agua, near Guatemala, in 1840, and figured and described by Bentham in Hooker's *Icones Plantarum* fifteen years ago under the name of *Lampra volcanica*. Bentham stated that "it is said to be very ornamental, and its introduction to our plant-houses would be very desirable." Living roots of it were sent to Kew last year from Guatemala, having been collected at the bottom of the crater, where the daily range of temperature is from twenty-one to fifty-seven degrees, Fahrenheit. These are now in flower. From a fleshy tuber the herbaceous leaves rise to a height of about six inches, folding at the base and forming a stem. The flowers are composed of three ovate spreading segments, which at first form a cup, and afterward reflex. They are snow-white and an inch in diameter. A figure of the plant will shortly be published in the *Botanical Magazine*.

STYLIDIUM GRAMINIFOLIUM is a charming little pot-plant for the cold greenhouse. It forms a tuft of Armeria-like foliage and produces in spring an erect scape a foot high, bearing numerous rose-pink flowers each half an inch across, the scape and calyx being clothed with soft glandular hairs. The principal charm of the plant, however, is in the sensitiveness of the little hammer-like column formed by the union of the stamens and pistil. This column is bent back and rests almost against the calyx outside, but when gently touched it springs forward with a jerk and strikes the top of a corolla lobe. It returns to its former position in a short time if not again touched, but it loses its jerkiness if touched several times in quick succession. It is a native of Australia and was cultivated in England almost a century ago. Still it is a very rare plant now, although easily grown and pretty in flower, as well as being exceptionally interesting in the possession of sensitiveness.

INCARVILLEA DELAVAYI.—I noted this plant a few weeks ago as a new Chinese introduction, with large deep purplish-rose flowers, not unlike *Amphicome Emodi*, and likely to become popular in the garden. The note brought me the following interesting communication from Herr Max Leichtlin, the Baden-Baden sage: "From your note in

GARDEN AND FOREST I cannot quite make out if you possess plants of *Incarvillea Delavayi* at Kew. I can send you plants three years old. The flowers are much larger and brighter in color than those of *Amphicome Emodi*, and it is altogether a better plant. I am testing its hardiness this winter, having left a dozen one-year-old plants in the open ground. The *Amphicome* is not hardy here." Should the *Incarvillea* prove hardy enough to be left safely out-of-doors in temperate latitudes it will be a most valuable acquisition, and even if not so hardy as this, it is still a plant to be looked after sharply.

MARIANTHUS RINGENS is a greenhouse climber which was introduced from the Swan River, Australia, to Kew, in 1860, and was figured in the *Botanical Magazine*, t. 5233, under the name of *Calopetalum ringens*. It has been again sent recently from Australia and is now in flower in the greenhouse, where a second species, *M. Drummondii*, has been in flower for some months, the latter being an attractive little climber with bright blue flowers. *M. ringens* is a stouter plant, having wiry brown scabrid stems, alternate oblong-lanceolate bright green leaves, with a petiole half an inch long and blade six inches long. The flowers, which are in terminal umbels on the branches, are yellow and orange-red, an inch long, the lower half tubular, the upper divided into five spreading segments. The flowers last a fortnight or more and are pleasing in form and color. For growing on small trellises, both this and *M. Drummondii* are worth a place among choice plants for the conservatory. The genus, which belongs to Pittosporaceæ and is allied to *Sollya*, comprises fourteen species, all natives of Australia.

TECHICHATSCHIEFFIA ISATIDEA is a terrible name for an English tongue, but it has been given to a delightful little alpine which was introduced two years ago from Asia Minor, and was noted in *GARDEN AND FOREST* last year, p. 267, by Herr Max Leichtlin, to whom Kew is indebted for a plant, and, equally valuable, for the following directions for its cultivation. "It is a fine, a beautiful plant. When you plant it place it in a horizontal position between two stones with soil between and behind, so that while moisture gets easily to the roots the rosette of leaves will be sheltered from rain. It delights in plenty of sunlight. I expect to hear that the plant I send you will this summer produce heads of beautiful Lilac-like flowers a foot across." The description of the plant when in flower, as looking as if a bunch of bright-colored *Syringa*-flowers had been grafted on a herbaceous plant, is exceptionally alluring. Beside this there is the *Vanilla*-like fragrance and months' duration of the flowers.

ENKYANTHUS QUINQUEFLORUS.—Possibly this striking Chinese Ericaceous shrub is much more appreciated in American gardens than it is here. It is handsome enough in its shining green leaves and the rich red-purple of the bracts and young leaves to merit a place in good collections, but it is specially attractive in early spring when clothed with its whorls of reddish waxy-looking bell-like flowers. In your southern states it would, no doubt, grow to a large size, if planted out in a sunny position. Here we grow it in pots in the temperate house, along with many other Chinese and Japanese rarities. It is said to be both wild and cultivated in Canton, where it forms a moderate-sized spreading tree, and its branches, when in flower, are much used for house-decoration by the mandarins, as well as in the temples. According to the *Botanical Magazine*, where it was figured eighty years ago (t. 1649), it was introduced by Knight, the Chelsea nurseryman. The genus is monotypic and is allied to *Vaccinium*.

London.

W. Watson.

Cultural Department.

Seasonable Vegetable Notes.

THE first half of March has proved so balmy and spring-like that many persons have been tempted to make earlier sowings of several kinds of seeds than they have done for several years past. It is just possible, however, that the latter

half of the month may prove more like winter and show the wisdom of those who have done no premature garden work. Thanks to the fine weather, digging operations ought to be well advanced, but nothing is gained by sowing seed too early. Here we make our first sowing of Peas from the 25th to the 30th of March. Last year we sowed on March 27th and April 10th, and the first sown Peas, fit for picking, were only two days ahead of the second. For our earliest sowing we use Henderson's First of All, which gives more satisfaction than any kind we have tried. American Wonder, Little Gem and other dwarf kinds may be good for small gardens, but are not profitable where a large supply is required. For a second crop, McLean's Advancer still holds its own, while for main and late crops, Champion of England, Stratagem, Telephone and John Bull are all excellent. Where Pea brush has not already been secured no time should be lost in obtaining it and trimming it to the requisite lengths. Where brush is not available, wire netting, as recently recommended in *GARDEN AND FOREST*, is the best substitute, and for Sweet Peas it is decidedly preferable to the brush.

Early Celery should, by this time, be pricked off and kept growing in a temperature of sixty degrees at night. It is now time to sow for the main supply of Celery, if this is not already done. We find Giant Paschal the best keeping variety, and at the present time, March 16th, we have it in good condition. White Plume proved disappointing and has been discarded. Boston Market rusts so badly that it is waning in popularity. Kalamazoo, a western variety, has been introduced into the Boston market this year, and in flavor it is superior to all others; we purpose giving it a fair trial, also the Paris Market White Solid, said to be rust-proof.

Tomatoes, if sown eight weeks before the time for planting out, will make strong plants. It is a good plan to have at least a portion of them in six-inch pots, and if some fruit is set on them all the better. By using early varieties, such as Nicholson's Hybrid, Conference and May's Favorite, fruit may be gathered outdoors by July 1st. For a main crop we consider the middle of March early enough to sow the seed; if kept growing along without check these will be more profitable plants than those sown a month earlier. There are so many kinds now in cultivation that hardly any two persons in one locality consider the same Tomato the best. We find Livingstone's Perfection, President Cleveland, Table Queen, Ponderosa and Mikado all excellent varieties. If, instead of planting out in hills and allowing the plants to ramble at will, they are trained up to a trellis they will give far better returns. To construct a trellis, two by three inch posts six feet high are set in at intervals of six feet and laths nailed to these a foot apart; coarse wire-netting may be used instead of laths, but the netting prevents the foliage from standing out naturally. Tomatoes trained in this way take up little room, they are ornamental, the fruit enjoys sun and light, and is not bespattered with dirt by every rain-storm; it is of finer color, too, and better flavor than when lying on the ground. It costs a little extra work to tie up the plants, but one is amply repaid for it in the end.

Early sown Cauliflowers may now be transferred to a gentle hot-bed, and plants intended for outdoors gradually hardened off in a cold frame. The sashes should be thrown off Cabbage and Cauliflower plants on all fine days. Successional sowings of Lettuce and Radish should be made every ten days; when one crop is pulled or cut off, the same ground, with some fertilizer added, will answer again. To preserve lettuce when headed up it is well to whitewash the glass on the frames and give abundance of air. If not already done, sowings may be made in a hot-bed of New York Improved Egg-plant and Peppers of sorts. Hot-beds for both Melons and Cucumbers should now be prepared. Early Christiana is our favorite Melon. Among the English frame Cucumbers we have found Telegraph, Tender and True, Sutton's A1 and Pearson's Long Green all first-class sorts. Beets sown the latter part of January may now be transferred to a gentle hot-bed; any surplus may be pricked out-of-doors about the middle of April.

As soon as the ground can be worked the main sowing of Onions can be made. Yellow Globe Danvers is the popular kind in this section. Red Wethersfield also keeps well, and has a fine flavor.

Between the early rows of Peas we make sowings of Round Spinach. Sow seed of Beet, Turnip, Early Melon, Early Horn Carrot and Parsnip, and plant out Onion sets and Shallots as soon as the weather permits. Asparagus-beds may be forked over, raked and a dressing of salt given. Asparagus-seed can be sown early in April, and where new beds are to be made the same time is a convenient one.

Taunton, Mass.

W. N. Craig.

Work in Glass Houses.

AT this time many plants grown under glass must be repotted, and this change gives a good opportunity for cleaning the houses. Any necessary sponging of the plants should be done before repotting them, for newly potted plants are likely to be disturbed by this work, and if they become loosened in the pots they seldom make a good start. The wood-work in the interior of the greenhouse should be well washed; many insects are thus disposed of, and the appearance of the house is much improved. The material with which the stages have been covered also needs to be renewed now, and it is well to give the bottom of the stages a coat of whitewash containing a few spoonfuls of carbolic acid. The pots may be stood on clear fine gravel, which provides good drainage and does not soon become sour; if this is not at hand, clean sand or coal-ashes will answer very well. The pots themselves must be kept clean, for the greater success of the plants as well as for appearance sake, for nothing detracts

out of the old soil completely and by the removal of decayed parts of the tuber with a sharp knife, taking the precaution to dip the cut in slaked lime to prevent further decay. *A. macrorhiza*, *A. Jenningsii* and *A. Marshalli*, all of which are valuable sorts, should have somewhat heavier and stronger soil than the varieties first noted, and will flourish under conditions suitable for the growth of *Caladiums*. *Marantas* will be improved by repotting; the stock may be increased by division. All these plants require careful watering after repotting, for with the soil once soured there is small chance for success, especially with the delicate-rooted species.

Dieffenbachias are noble-looking plants when well grown, but, while some of the species are quite tender about the roots, they are gross feeders, and enjoy a rich and open soil containing a liberal quantity of dried cow-manure. *Curmerias*, *Phyllotæniums*, *Kämpferias*, *Sphærogyne latifolia*, *Cyanophyllums* and other warm-house foliage-plants will also be starting, and should be encouraged by repotting before the growth is far advanced, or the first effort may produce stunted foliage.



Fig. 24.—An Iris Garden in Japan.—See page 122.

more from the effect of a good collection of plants than filthy pots.

Many of the warm-house plants will be improved by a shift into larger pots, but this is not needful in all instances; a good top-dressing is quite sufficient for some, including the foliage species and the flowering kinds of *Anthuriums*. This applies only to healthy plants, for if the roots of *Anthuriums* are not in good condition it is better to shake all the old soil off and give the roots a washing previous to repotting. It is also an improvement to these plants to cover the soil with living sphagnum, for they are, to a great extent, surface-rooting, and the growing sphagnum is quite agreeable to the young roots. Many of the *Alocasias* may be treated in the same way with equally good results, especially those of the type of *A. Veitchii*, *A. Lowii*, *A. Sanderiana* and *A. intermedia*. A coarse, spongy compost is best suited to *Alocasias*, with abundant drainage. The majority of these plants are benefited by being shaken

Sphærogyne and *Cyanophyllum* especially need plenty of pot-room to secure perfect development.

Ixoras are among the best of stove flowering plants when properly treated, but, unfortunately, they form a favorite feeding ground for mealy-bug and scale insects. A camel's-hair brush dipped in acetic ether is very effective in removing these pests from the tender foliage. The direct rays of the sun are too powerful at this season for tender foliage-plants, and they must be properly shaded.

Holmesburg, Pa.

W. H. Taplin.

The Earliest Irises.

WE are seldom favored during March in this latitude with such genial conditions as have prevailed in the present month. Moderate temperature and absence of high winds and storms are proving ideal conditions for the flower-garden. The somewhat early bloom of the Cloth of Gold and hybrid

Crocuses and the bursting spathes of the first Daffodils tell of the spring in earnest. The earliest Snowdrops are beyond their prime, as are the early Scillas. The Grape Hyacinths and various Chionodoxas are advancing rapidly, and the typical reticulata Irises in full flower indicate that the season for the group is nearly at an end. Mostly equal in sturdiness and earliness to the Snowdrops, the early-flowering bulbous Irises merit more attention than they generally receive. With few exceptions they are perfectly hardy, their flowers are showy and very enduring if only protected from storms by an overhead covering. They seem to revel in any temperature except a warm one. Usually, at or near freezing, the flowers will remain in good form for ten days or a fortnight, and I have seen them endure zero weather without apparent damage to form or color.

The flowering time of plants under conditions which prevail here in winter is very uncertain, of course, but when the frost releases its hold to the depth of four to six inches, at which these bulbs are planted, activity at once commences, and they make progress at every successive loosening of the ground after successive freezings. The different species and varieties do not flower in the same order every year, but their flowering time here this year is a fair indication of their general habit. *Iris Histrio*, a Palestine Iris, flowered early in February. This is a bluish-purple flower with creamy centre and blue markings on the falls. It is among the most charming of the reticulata section, but, unfortunately, is the tender member of the family and is not a satisfactory winter plant for this latitude. It seems to endure safely ten degrees of frost, but is badly injured at a lower temperature. Both the leaves, which in this species are more forward than others of the netted Irises, and the buds were injured by zero weather, though expanded flowers survived.

About the same time appeared *Iris Kolpakowskiana*, a dainty flower, whose diameter could be covered by its name printed in fair-sized type. This species has narrow linear leaves and flowers of a light maroon color. *I. Danfordiae* opened next, a very dwarf little deep yellow flower, whose color is particularly welcome at this season. This species has not proved free-flowering here. *I. Bakeriana*, on the contrary, has never disappointed me since its arrival, and increases at a fair rate. It is a favorite for its quaint finished beauty of petal, with deep royal purple and light blue markings, though there are forms much lighter. It has peculiar rounded channeled leaves, instead of the four-sided channeled leaves of the *I. reticulata* type. *I. reticulata*, var. *histrioides*, is the noblest in stature and size of the family, and the flower sometimes pierces the ground before any sign of leaves appears. The color is a blue-purple, sometimes light and in other forms dark. It may be said here that as the typical *I. reticulata* ranges through shades of reddish purple, naturally the blue forms are rarer and more valued.

Iris Cyanea is one of the best of these, a small flower, about the size of the best forms of the type, of a light indigo-blue tint. *I. reticulata*, J. Nelson, is also a blue form, lighter and bluer in tint than the variety *histrioides*. There are few plants in which there is more choice than in *I. reticulata*. Growers of this are often disappointed by receiving bad forms from the dealers. Many of these are very small flowers, weak in color, and not worth growing. How much dull reddish purple (magenta) any one is content with in his flowers is a question of taste, and not an occasion for discussion, but it seems to me that the coloring of *I. reticulata* major, the large-flowered form, leaves little to be desired. This is a very deep rich purple with reddish reflections, on which the bright yellow signals appear as brilliant markings. The Major form, which is an English seedling, is slightly earlier than the type.

Aside from the reticulata Irises, there are two other most charming species now in flower. *I. Rosenbachiana*, from Bokhara, is a most peculiar species. The white bulbs have very short persistent roots, which appear almost as reversed bulbs. The flower-spathes appear before the leaves, and are usually two or three flowered. These flowers are on long scapes, and in my specimen were in two varieties, light and dark shades of the pinkish purple known to ladies as heliotrope, deep on the fall, and shading to nearly white on the style; on the claw is a knife-like ridge of yellow. There are said to be many forms of this flower, even pure white kinds. *I. Persica* is a well-known old species of the same family, and there are few small Irises more beautiful than the old forms with the dark purple blotch on the broad fall and the pale blue tinge of the claws. Other Irises are rapidly perfecting their flowers to continue the season of these interesting and often charming plants.

The subject of Bulbous Irises has been most exhaustively

treated from both a garden and a structural point of view by Professor Michael Foster in a monograph published by the Royal Horticultural Society. As is well known, Professor Foster's conclusions about Irises are considered final by all growers. His monographs are models of special literature, which record simply and clearly the thoroughly complete observations of the grower and the scientist, a combination unhappily too rare.

Elizabeth, N. J.

J. N. Gerard.

The Hardy-plant Garden.

WITH the Snowdrop, Crocus, Siberian Squills and Chionodoxas in bloom, and English Primroses, Violets, Lenten Roses and Alpine Forget-me-nots in bud, we may safely say spring is here. In clearing away the winter's covering, preparatory to trimming and dressing over the borders, shrubbery and rock garden, I note, among many plants which have come through unusually well, the lovely Japanese Ferns, *Asplenium Goringeanum*, var. *pictum*. This is the second winter it has stood the test. With a similar northerly exposure, the rare and beautiful *Ramondia Pyrenaica*, often considered tender in English gardens, has also proved hardy.

I wish again to protest against the prevalent custom of digging over borders in early spring. Newly planted borders will, no doubt, be benefited by a light digging, especially on heavy soils; but in established shrubbery, vastly more harm than good will result. Incalculable harm may be done by an inexperienced person in the herbaceous border with a spade. Only a fork should be used, and in the hands of one acquainted with the plants and interested in them. Otherwise, it is better left untouched. With the exception of an overhauling once in two or three years, all that is done to our borders is to cover them with manure in the autumn, clearing off only the loose litter in spring; and on our light soil this plan works well.

The flowering shrubs which need spring pruning are only those which bloom on the current year's growth. Some Roses, notably the hybrid-perpetuals, *Hydrangea paniculata* and Rose of Sharon (*Althæa rosea*) are examples. The majority of the flowering shrubs in gardens make flower-buds on the previous year's growth, such as *Spiræa Thunbergii*, *Philadelphus coronarius* (the Mock Orange), *Wiegelia rosea* and *Deutzia gracilis*. Most of these shrubs are of naturally graceful habit and need pruning seldom, or at least only in the way of thinning out weak stems. Whatever pruning is necessary should always be done just after the flowering season, when no flower-buds will be cut away, but a growth of new wood encouraged, upon which next year's flowers will appear.

Clematis paniculata is a strong-growing species, easily climbing fifteen to twenty feet. If allowed to have its way there will always be a space of several feet near the ground barely covered, and with very few flowering branches, with something like congestion at the tops. As the shoots, to a greater or less degree, are killed each winter, probably because they are not sufficiently matured in autumn, it is advisable to wait until the buds commence to show life, and then select enough of the best growth to cut it back to within six feet of the ground. The result will be healthy growth, well down. Seeds of this *Clematis* are better sown in the autumn in boxes and wintered in a cold frame. They will then come up in spring, rather sparingly at first, and not to any extent until July. As seeds are offered by dealers in their spring catalogues, it can be sown now in boxes and kept in a shady place, but must be well watered. Some will come up, but toward the end of the summer. The seed-box must be held over, as before, when the majority will germinate the second spring. It is not unusual for seeds of many plants belonging to the same natural order as the *Clematis* to lie over a whole season without germinating. *Pæonies*, *Hellebores* and some *Anemones* may be noted as examples. I have known some *Trollius* and *Ranunculus* do the same, but they were exceptions, rather than the rule, with these genera.

Wellesley, Mass.

T. D. Hatfield.

A Few Neglected Apples.

THE Spitzenberg has gained a notoriety of late as "a worn-out Apple." It is true that the Spitzenberg trees grafted in the root are not able to endure our climate well. The trees are damaged up and down the body by sap-blight, or late wet snow-storms in spring, which check growth and rupture cells. But Spitzenberg grafts set high up on seedling trees, as our fathers grew them, are as hardy as ever. Like many other varieties it is subject to attacks of *trypeta pomonella* and codlin-moth.

The Swaar is another noble apple not easy to obtain in market. The tree is not a rapid and symmetrical grower, and the fruit is highly appreciated by insects. But there is not an apple to compete with it in March and April for beauty, size and quality. It is equally good for cooking and for the table, and outranked by no apple in high rich flavor. I grow the Swaar securely on its own stock, but prefer it grafted higher on seedlings.

There is a remarkably fine apple grown extensively in Michigan called the Belmont or Waxen apple. It has been a great favorite there for the last forty years. I have grown it here successfully and recommend it in strong terms for a December apple. It is large, smooth, rich yellow with a blush. The tree bears early and abundantly, but it is not long-lived. The limbs spread and bend low. A tree in bearing is a fine sight. Few of the catalogues contain the Belmont in their lists.

I have found here another exceedingly fine apple for November and December that we have locally named the Harding. It is a seedling in the orchard planted here by Dominie Kirkland, missionary to the Oneidas. The original tree planted in 1792 still stands, but is nearly gone to decay. We are now saving the fruit by grafting. It should be disseminated. The original tree and several grafted from it stand on the farm of Lyman Harding, in this town.

There is an apple of remarkable qualities for a dessert fruit, which I think has rarely gone beyond central New York. Here it is known as the Rag Apple. Its history I do not know, except that it originated in Otsego County. It ripens in October and November, keeping through December. It is so mild in flavor as to stand just on the border between sweet and sour. It is sought after by some people as a *sine qua non* in the late autumn.

I believe there is no reason why the Spitzenberg may not be once more as common as it was fifty years ago, and as good. We must grow more of our own trees, and graft them to such varieties as fail on nursery stock. The philosophy is easy to comprehend. A nursery of seedlings growing in a cold climate is eliminated of the most tender sorts by cold winters before they are grafted. When old enough to take cions five feet from the ground the trees that remain are the toughest and hardiest. We, therefore, set our orchard of trees selected for endurance.

Clinton, N. Y.

E. P. Powell.

The *Daphnes* are among the best of all shrubs in the European mountains, and the alpine kinds are mostly small-growing species, which can be considered as rock-plants as well as border-plants. We grow twelve kinds in the Jardin Alpin d'Acclimatation, but the best for general trade purposes are the following: *D. Alpina*, which grows in the mountains at an altitude of 700 to 5,000 feet. It is an upright-growing, many-branched shrub, with deciduous leaves, which are obovate and of a light-green color. It has small yellowish-white flowers, which are fragrant, disposed in small clusters to the end of the branches. It flowers in May and June and is good for rockeries in sunny places. *D. Blagayana* is a rare shrub of the Austrian Alps, growing from 2,500 to 5,000 feet altitude, dwarf and spreading, with large, thick, ovate glaucous green leaves and yellowish-white flowers, which are borne in large clusters, and flowers here in February and March in half-sunny places in the rock-garden. *D. Cneorum* grows on the limestone Alps of the Jura and on the Carpathian Mountains. It is one of the best species, forming low dense tufts of evergreen leaves on numerous and spreading branches. The unopened buds are crimson, but the flowers are pink, disposed in dense terminal umbels; it is deliciously fragrant and flowers early in April, and occasionally during the summer, until September. It should be exposed to full sun, either in the rockery or in the border. There is a variety with white flowers, and another with larger flowers than those of the type. *D. petræa* is a rare plant of the Dolomites, from 3,500 to 5,500 feet high. It is a dwarf shrub, twelve to fifteen inches high, with thick, fleshy branches, carrying numerous small, thick evergreen leaves and small clusters of rosy-white fragrant flowers. It delights in half-shady places in the rockery. *D. striata*, of the eastern and western Alps, and *D. Verloti*, of the Alps of Dauphiny, are nearly allied to *D. Cneorum* and need the same exposure. *D. rupestris* is a variety of *D. petræa*. These *Daphnes* are good little shrubs, and particularly suitable for the rock-gardens. They are increased either by cuttings, by grafting on *D. Mezereum* or by seed.

Geneva, Switzerland.

H. Correvon.

Hardy Ferns.—Many a shady place bare of plants could be made beautiful by planting some native Ferns. Four of the best large-growing evergreen ones are *Aspidium marginale*,

A. spinulosum, *A. acrostichoides* and *A. cristatum*. Some nice smaller-growing evergreen species are *Polypodium vulgare*, *Asplenium Trichomanes* and *A. ebeneum*. I find the Hound's-tongue Fern, *Scolopendrium vulgare*, hardy and most attractive. Among deciduous Ferns few equal the *Osmundas*. The three species, *O. regalis*, *O. cinnamomea* and *O. Claytoniana*, are of large size, and are known as flowering Ferns. The *Woodwardias* are also of good size, and so are many of the *Aspleniums* and *Aspidiums*. The Walking Fern, *Camptosaurus rhizophyllus*, and its sister species, *Asplenium pinnatifidum* do best on damp rocks.

Pillar Roses.—Two good Roses for training to pillars are *Gloire de Dijon* and the *Crimson Boursault*. This does not seem to be generally understood, or these plants would be used in this way more frequently. While both are entirely hardy here, the first one, being a Tea, may not be quite hardy north of this. To give it the best chance, it should be set where the afternoon sun will not strike it in winter. It is a constant bloomer, and its rosy flesh-colored flowers are much admired. The *Crimson Boursault* flowers but once in June, like most all *Pillar Roses* do. *Crimson* is an uncommon color among climbing Roses, and this old half-double *Boursault* (*Amadis*, as it is sometimes called) is a striking member of a not very useful family. Like other varieties of *Rosa alpina*, this plant is about thornless.

Germantown, Pa.

J. Meehan.

Correspondence.

The Care of our Public Parks.

To the Editor of GARDEN AND FOREST:

Sir,—For several years past large tracts of land have been gradually secured for park purposes in the vicinity of Boston, until now we find our city encircled by a system of connected pleasure-grounds. When, in addition to this general system, we call to mind that we have in the heart of the city the Common and Public Garden, while, still beyond the parks, large tracts of land have been recently acquired by the Metropolitan Park Commission, it would seem as if no other place on earth were more abundantly and wisely provided for.

Living in a city so favored, it seems almost ungracious to criticise, but while the general park system is so excellent, we are now beginning to suffer from having the details of planting so badly done as to greatly endanger the beauty of the entire scheme. Although a large portion of the system is still unplanted, many parts are almost entirely completed. Probably the best-known and most generally admired portion is Franklin Park, and it is difficult to imagine anything finer than its general design. The view from the Overlook, across broad meadows and rocky knolls covered with Cedars, is singularly beautiful, and, except for the necessary evil of so large a number of paths and driveways, nothing can be said of it except in praise.

But if we leave the Overlook and wander through the numerous paths, we find quite a different effect. In many cases the trees and shrubs are so thickly planted that already they are suffering and growing tall and thin in their attempts to reach the light. In one place large masses of *Rhododendrons*, *Kalmias* and *Andromedas*, with an unfortunate mixture of deciduous shrubs, are planted on a southern slope, where, from sunrise to sunset, they never obtain one instant of the blessed shade they crave, and as if enough suffering had not been inflicted upon them, the ground has been thickly planted with vines, which have grown over the shrubs, in many cases almost entirely covering them, producing, it is true, a picturesque effect, but one which can only be short-lived.

This abuse of vines is very noticeable in the Back Bay fens, where *Honeysuckles* cover the stone-coping and iron-railing, but, unfortunately, cover as well every shrub within reach, and soon nothing will be visible but a vast network of vines and dead shrubs.

The steep banks of the fens, covered with the rich muck from the stream below, were thickly planted with a vast and miscellaneous collection, which, taking kindly to the soil, has grown amazingly, and we have now an assortment of trees, shrubs and flowers which has certainly the merit of variety, at least. Spruces and *Spiræas*, Oak-trees and Rose-bushes are springing up side by side, pushing and crowding each other, and we are still left in uncertainty as to whether an evergreen forest or a flower-garden is to remain ultimately. Undoubtedly, these things were thickly planted to bind the soil of the steep banks, but the time for the axe has come, and something must be done at once if we are to save anything out of such a chaos.

We are, therefore, compelled to face a difficulty in the care of our parks that has not as yet been solved. We have been exceptionally fortunate in having men of great talent to create our parks, but as yet we have no one to carry out their ideas or to watch and care intelligently for what has been planted. It is manifestly impossible for the designer of a park to attend personally to the detail work of thinning out, removing nurses at the proper time, etc., and the Park Commissioners can hardly be expected to find time for such work, even if they have the necessary knowledge.

The result is that this most important point in the management of young plantations is entirely neglected.

Boston, Mass.

H. S. H.

The Flavor of Maple-sugar.

To the Editor of GARDEN AND FOREST:

Sir,—Living at the centre of the maple-sugar manufacture, and being a sugar-maker on a moderate scale myself, I venture to respond to Professor Plumb's criticism upon what he denominates the modern process of its manufacture. There is, as yet, little difficulty in obtaining all that there seems to be any call for of sugar made in the primitive fashion to which the Professor refers with so much satisfaction. But very little of it is called for, or can be sold at paying prices. What is sold now goes mostly to western cities—especially to Chicago—to be used in the manufacture of what is really a factitious or greatly "extended" article.

Many of us are aware that the tastes of our childhood, especially in food, cling to us, at least in imagination, even to old age. Those of us who are getting well on in years recall only the maple sugar, or syrup, of the old iron caldron hung upon a pole, supported by stakes, and open to receive whatever the wind, the sparks, the dropping mosses and fragments of bark may have added to the sap, received in open troughs and gathered in open buckets. Most of these adventitious matters were of a "woody" nature, and veritably conveyed to the open kettle a woody flavor, which, however dear in our youthful reminiscences, was not the true and unadulterated taste of the maple-sap, or of pure maple-sugar. Not to put too fine a point on it, that flavor, though unquestionably "woody," was far from being a "pure maple taste." It was rather the taste of the woods in general, maple being more or less apparent, along with the rest.

Now I am far from blaming any one for liking that flavor. I like it myself, spite of knowing so well where it comes from. There is nothing whatever astonishing about the preference felt for it by the older generation. Yet we must look at the fact that the demand for a purer article, of more delicate flavor, is now far greater than the demand for the old-fashioned sort. This pure maple sugar, or syrup, has made a market for itself in the last twenty years, far better and wider-spread than any present market for the old kind; and there are many who, having used no other than the new, regard the older make as a factitious, or at least a greatly adulterated manufacture, a "filthy compound," as a visitor at my home not long ago styled it; having never before seen that black, woody-tasting product of ancestral or, perhaps, aboriginal art.

Professor Plumb makes one point which at first, after becoming familiar with the modern method, I thought a good one myself. It appears really to be too fluid, not boiled down enough; and many makers have tried to amend it by more concentration. The result was simply that this more concentrated syrup grained in the cans and was utterly spoiled for table use. Every maker of the pure maple-syrup has been forced, a hundred times at least, to explain this unfortunate fact. If it could be made heavier, without graining, we should all be glad to know how. But being pure maple-sugar, with no admixture, much less a preponderance of "inverted" sugar, it becomes a very nice and a very important matter to stop the concentration at the right point, which is signified to the workman by the thermometer which controls his work. It is but a slight matter to concentrate this pure syrup by a little boiling before use. The difficulty could be obviated by the use of a harmless chemical substance; but then it could no longer be sold honestly as "pure and unadulterated maple-syrup."

Newport, Vt.

T. H. Hoskins.

To the Editor of GARDEN AND FOREST:

Sir,—I have read with interest in your issue of March 7th the letter of Professor C. S. Plumb, on maple-syrup. His contention is that the evaporator-process of maple-syrup and sugar-making has overrefined the product and brought about a loss of the subtle and indefinable flavor peculiar to it. Professor

Plumb was born, as he states, under the shadow of the New England Rock Maple. He knows the ways of the sugar-bush and camps, and, if I mistake not, we have indulged together in that toothsome dainty, "sugar on snow." But I fear that his sojourn, almost under the shadow of the city where more "pure Vermont maple-syrup" is made than in all the sugar-bushes of the Green Mountain state combined, has vitiated his taste for the luscious sweet.

I cannot agree with him that the evaporated maple syrup and sugar has lost its savor as compared with the open-kettle product. Its flavor, as a rule, is more delicate, though less pronounced. The kettle often turns out a fine article, but, with average hands, seasons and saps, is less liable to do this than the evaporator. The open-kettle syrup is more readily burned and inverted, and its delicate flavor is more apt to become disguised by the products of prolonged boiling and inversion.

The modern palate delights in delicate as distinguished from pronounced flavors. We used to prefer mother's butter, and we are apt to look back to it as the acme of perfection. If it were now placed beside the creamery butter, which we then would have thought flat and which we now admire, it would often be found possessing too strong an aroma. We like lamb better than mutton.

Light-colored and delicately flavored maple-products are no temporary fads, but have come to stay. Our best sugar makers and buyers, brought up, so to speak, on open-kettle sugars, have not endorsed the evaporators for naught. They have found better goods, easier made, selling at higher prices, to be the results of the use of the evaporator. The consumer, moreover, though at first inclined to doubt upon the score of color, is seldom disappointed in the taste, unless wedded to the pronounced and often buddy flavor of the "last runs."

The remarkably warm weather of the past two weeks has set our sugar-camps in operation. I expect soon to send Professor Plumb a gallon of Vermont evaporator-made maple-syrup. "The proof of the pudding is in the eating," and I shall call on him to eat his words as well as our syrup.

Ag'l Expt. Station, Burlington, Vt.

Joseph L. Hills.

Notes from West Virginia.

To the Editor of GARDEN AND FOREST:

Sir,—*Jasminum nudiflorum* began to hang out a few yellow blossoms in December. Dandelions have been found every week of the year. Chickweed, Shepherd's-purse and *Draba verna* are common everywhere, and not to be despised when flowers are few. These are all in bloom.

A little *Veronica*, *V. Buxbaumii*, naturalized from England, opened its blue eyes a week ago in a neglected garden-bed in company with some early Pansies, and, of course, the white of Snowdrops and the blue of Scillas brighten all the borders.

Several varieties of *Narcissus* are now flowering. *Chionodoxa* and *Narcissus princeps* make a charming picture in the rockery, and are surrounded by mats of *Periwinkle*, whose blue blossoms are twinkling by the hundred in the morning dew.

Single white Violets grow beneath the *Forsythia*-bushes, and betray their presence by their balmy breath. The *Forsythias* are well into flower. The grass of the lawn has been studded with Crocuses, and as these are passing some Saxifrage-plants, clustered at the foot of a ledge of rock, are showing. One of these, *S. crassifolia*, var. *Schmidtii*, has handsome bright pink blossoms, and remains a long time in bloom.

An early-flowering Plum is now attracting the bees, and shares their attentions with its near neighbors, an Aspen Poplar and a Silver Maple, both in flower. Willows, Hazels and Alders hang out their pretty catkins, and in the woods the first Bloodroot and Toothworts are blooming in sheltered sunny spots. Last year we did not find Bloodroot until the 4th of April. And all this in mid-March, with dusty roads and thirsty fields beginning to long for rain.

Shepherdstown, W. Va.

Danske Dandridge.

The Weeping Willow.

To the Editor of GARDEN AND FOREST:

Sir,—Thoreau, in the volume entitled *Early Spring in Massachusetts*, writes of the Weeping Willow as blooming "not the less hopefully, though its other half is not in the New England world at all and never has been." Will you kindly inform me whether this is true, and if so, whether it is the pistillate or staminate tree which we know here?

Worcester, Mass.

A. H. T.

[It has always been stated that the pistillate plant of *Salix Babylonica* only was introduced into this country.

The male tree seems to be cultivated in Europe, and it may be that of late years this also has found its way to the United States. We have never seen specimens of the staminate Willow in this country and would be greatly obliged if any reader who has knowledge of such a tree in this country would report the fact to us.—Ed.]

Recent Publications.

The Old Colony Town and other Sketches. By William Root Bliss. Houghton, Mifflin & Co.

Some time ago we noticed Mr. Bliss's *Colonial Times on Buzzard's Bay*, and the town with which he now chiefly deals is Plymouth, from which he makes brief excursions into more southerly regions. He gives us citations from old documents and records which show how thickly wooded were once many regions which now are barren of forest growth, or are covered only by dwarfed substitutes for their original riches. He shows us, too, that the early colonists were desperately afraid of the ruin which eventually overtook their inheritance in this direction, and that the fact of its arrival at a later day meant no want of wisdom on their part and no lack of legislation. For example, looking eastward from Plymouth Rock, says Mr. Bliss, "you see a long sand-spit stretching out from the south shore. It keeps the sea-swells from rolling over the harbor when the tide is in. It was once covered with trees; and a town-meeting of the year 1702 considering 'the great damage likly to accrew the harbour by cutting down the pine trees at the beach' did order 'that henceforth Noe pine trees shall be felled on forfeiture of 5 shillings pr tree & that Noe man shall set aney fire on said beach on forfeiture of 5 shillings per time.' Now there is not a tree on it." Again, from Burial Hill you see "the barren sandy highland of Cape Cod, which, when the Mayflower arrived, was 'compassed about to the very sea with oaks, pines, juniper, sassafras and other sweet wood.'" The promontory at the end of Duxbury Beach, which bears the Gurnet Lights, and in old times was called "the Gurnett's Nose," was likewise covered with trees. Seventy-five years after the landing of the Pilgrims their species were noted: Walnuts, Poplars, Cedars and Hornbeam, which last, says Mr. Bliss, "was a hard wood, used for the keel of ships." Probably Tupelos were meant; for a little farther to the south, near Buzzard's Bay, these trees are now common, sometimes finely developed in sheltered woodlands, sometimes near the edge of the water, so gnarled and torn and twisted that it is hard to determine their character without close examination; and the only name by which they are locally known is Hornbeams.

Of Cuttyhunk, one of the islands which lie off the mouth of Buzzard's Bay, Gosnold wrote, nearly three hundred years ago, that it bore "noble forests," and was covered with "the elegantine, the thorn and the honeysuckle, the wild pea, the tansey and young sassafras, strawberries, raspberries, grape vines, all in profusion." Now, Mr. Bliss tells us, "its surface is a succession of hills and valleys growing coarse grass, without a tree or a shrub," or any vestige of its former forests. But on Naushon Island, not far away, are "old forests of Beech, Oak, Hickory, Pine and Cedar trees"—evidently owing to the fact that it has always been an undivided piece of property, and during nearly two hundred years was in the possession of only three successive families. Moose and deer were common on this island at least as late as the middle of the last century; and there are deer still, although no moose, in the woods of Plymouth County and Cape Cod.

Mr. Bliss tells again the true story of Plymouth Rock, and it is worth repeating, for, although often told before, legend thrives in our new western world as well as in the Old World across the seas, and here, as there, often receives the seal of official endorsement. "Up to the year 1741 this famous Rock . . . rested on the shores unnoticed. It was in the way of commerce, and some persons having, in the

phrase of the time, 'Libertie to Whorfe downe into the sea,' were about to cover it with a wharf. Then Thomas Faunce, ninety-four years old, came up from the back country and protested, and told the wharf-builders that his father had told him when he was a boy that the Mayflower passengers landed on the Rock. The memory of a man of ninety-four is not likely to be correct in regard to words spoken when he was a boy. Moreover, Faunce's father was not a passenger on the Mayflower, and therefore he did not tell this story to his son from a personal knowledge of it being the landing. The wharf was built; and the Rock eventually became the doorstep of a warehouse. . . . The only record of the first landing is in these words: 'They sounded ye harbor & founde it fitt for shipping, and marched into ye land & found diverse cornfeilds & little running brooks, a place fitt for situation; at least it was ye best they could find.' From what point on the shore the men who were prospecting for the colony 'marched into ye land' is not known. Romance and a vague tradition have designated this Rock, the only boulder on the shore; but its remoteness from the island seems to forbid the supposition that the shallop went so far away from its direct course to find a landing-place. And yet there is some reason for believing the story of the Rock. Faunce was born in the year 1647." Therefore, until he was forty years old, some of the passengers on the Mayflower, including John Alden, survived. "When Faunce related his story the landing was not so ancient an event as to have lost its traditional details; and he may have told what was already known to others, who, feeling that whether their ancestors landed on a rock or on the beach was a matter of no importance, did not trouble themselves to come forth and confirm Faunce's story."

It is less than fifty years since popular attention and sentiment were directed to Plymouth Rock. Daily steamboats brought streams of pleasure-seekers from Boston to Plymouth long before the Rock was an object of attraction to them. But now, says Mr. Bliss, modern pilgrims to this stone "constitute a daily show which serves to entertain the loungers who are sitting atop of Cole's Hill. . . . They walk around the Rock; they put their hands on it; they gaze at it; they spell aloud the inscription '1620'; they step across it; they stand still on it and make good resolutions; and I have seen respectable-looking men and women meet on it and kiss each other." In short, it has become more than a relic—a fetich, an object of popular wonderment and adoration. "Elevated into the protection of iron pickets and gates, sheltered from sun and rain by a granite canopy, it has become to strangers and wayfarers a curiosity as extraordinary as a mermaid or a flying-horse would be."

Burial Hill likewise gets more honor at the hands of modern sentiment than history can prove it to deserve. "It is not probable," says Mr. Bliss, "that any of the Mayflower passengers were buried in this hill. In John Howland's time, and long before, it was the custom to bury the dead in the lands belonging to their homestead, where the burial was done with no ceremony of any kind; earth to earth, without even a prayer. . . . Many of the Mayflower company who died within the colony were probably buried in their own farms, and for this reason their graves are now unknown. . . . As the 'common house' in which the colonists worshipped stood, until the year 1637, at the foot of Cole's Hill, this hill became the churchyard according to a custom of Old England." Four skeletons, exhumed about fifty years ago from Cole's Hill, support the belief that this, and not Burial Hill, was the first burial-place of the colonists. "It has been said that graves on Burial Hill were leveled and sown with grain to conceal from the Indians the losses of the colony. The tender sentiment of this poetic and oft-repeated statement is dispelled by the fact that the neighboring Indians were friendly; and if they desired to know, it was easy to ascertain what the losses had been by counting the heads of the survivors." In 1637 a new meeting-house was built at the foot of Burial

Hill, and then it did become the churchyard; but the fact that only five grave-stones exist here, bearing dates earlier than 1700, shows that the custom of laying the dead to rest in the lands whereon they had lived still persisted; and, indeed, as Mr. Bliss remarks, "the custom of burying in the homestead land still exists in New England."

Notes.

Among the cut roses in market last week were exceptionally good flowers of Anne de Diesbach, Baroness Rothschild, Mabel Morrison and Paul Neyron. These hybrids have hardly been seen in the florists' windows before this season.

A bulletin has just been issued by the Tree-planting and Fountain Society of Brooklyn, New York, in which Mr. L. Collins, the secretary of that society, has collected a great deal of useful information in regard to street-trees, such as what varieties to plant, how to plant them and how to care for them after they are planted.

Cornus mas we have recommended as an admirable shrub on account of its early blooming, its good foliage and its ornamental fruit. In this country sometimes it attains to the proportions of a small tree, but we hardly expect that in our climate it will ever reach the size of a specimen in Fulham, England, which is said to have a dense head twenty feet in diameter.

The first new potatoes of the year came from Havana early in February, with the Bermuda crop a close successor, and last week new potatoes from Florida made their appearance here. These sold for as much as nine dollars, No. 1 size from Bermuda reaching as high a price as ten dollars a barrel. Peas, for the first time this season, came from as far north as Charleston, and the first pickings commanded double the price of the same vegetable grown further south. Strawberries from Charleston are now here.

Some time ago the London papers contained alarming articles to the effect that a child had been poisoned by eating American apples. After a careful investigation the government analyst has been able to find no poison whatever, and a piece of the Baldwin apple which is alleged to have poisoned the child was fed to a mouse, which suffered in no way. It is not improbable that these tales of the dangers which were said to threaten those who ate fruit from orchards which had been sprayed with arsenites against the codlin-moth were invented by interested dealers in order to depress the price of apples from this country.

Inasmuch as olive oil is mainly a hydrocarbon and its constituents come from the air, it follows that if the pomace and all the other offal from the trees are returned to the land it is hardly possible to exhaust the soil. The virgin soils of California are rich in lime and potash, and these are two of the constituents which the Olive-tree likes. Mr. Edward Cooper, of Santa Barbara, in that state, has trees growing, without irrigation, in black adobe, on stony hill-sides, on table-lands with a clay subsoil, and they seem to thrive equally well. Where the fruit is pickled, certain mineral ingredients are taken away which should, of course, be returned to the soil.

Among the varieties of Crozy Cannas distributed last year not one is more striking than Charles Henderson, which proved itself admirable for outdoor bedding on account of its sturdy, although dwarf and compact habit and its large and erect spikes of bloom. We lately saw many specimens of this plant flowering in the greenhouses of the F. R. Pierson Company, at Tarrytown, where they proved that it is even better as a pot-plant than it was for outdoor use. None of the varieties so far sent out excel it in its dazzling crimson color. The individual flowers are very large and of admirable form, and the yellow marking in the centre adds to their attractiveness. A house of well-grown plants of this variety in full bloom makes a spectacle which the beholder will not soon forget.

The practice of issuing poster bulletins from the Experiment Stations is becoming somewhat general, we are glad to know. Professor L. R. Taft, of the Michigan Agricultural College, has just sent out one upon the Potato-scab, which contains directions for the proper treatment of the tubers with corrosive sublimate, and an illustration of the potatoes from treated and untreated seed. Bulletin No. 2 follows the excellent example set by Professor E. G. Lodeman, of Cornell, in giving a calendar for spraying different trees against insects and fungi. These bulletins are both printed on card-board, with attachments for hanging them up, and they contain in a brief com-

pass all that the farmer needs to know to enable him to use efficiently the best devices and remedies which science has yet discovered for the prevention and cure of the most dangerous plant-diseases and for the destruction of insects most injurious to crops.

Florida orange-growers are beginning to invent machines for improving the appearance of their fruit. One machine keeps the oranges revolving in a cylinder containing sawdust, which by friction scours off the smut and scale from the rind. Worked by hand-power, this machine will turn out forty boxes a day, all cleaned and ready for packing. A larger machine consists essentially of two cylinders enclosed in sheep-skin covered with thick wool. The cylinders revolve in opposite directions, wiping and polishing the fruit, which turns over and over, so that every part of the surface is made smooth and glossy. The machine is so thoroughly padded with wool that the fruit is said to escape any injury, while its color is brightened up materially. A car-load of oranges can be treated with this machine in a day, and the oranges fed through a hopper can pass on to the sizing-machine without any additional handling.

To the subscriber in Morristown, New Jersey, who has been advised to sow some Grass-seed on his lawn, which is getting thin, and who inquires when the seed should be sown, we reply, sow it immediately. It is good practice to sow some seed of Blue Grass and the finer varieties of Rhode Island Bent Grass upon lawns every spring just as the frost gets out of the ground, and before they are rolled down. Some of the seed sold as Red Top produces rather coarse grass, but the majority of it will make a good lawn if it is kept cut close. A light dressing of bone-meal and ashes, or some good salt of potash, is useful on the lawn at any season; and now is the time to use cautiously a little guano or nitrate of soda. To have their best effects nitrogenous fertilizers should be given in small doses, and often, up to midsummer. Nitrogen in soluble form, when applied in autumn, will leach out during the winter. There is little danger of this in the case of the potash and phosphates. The soil will catch and hold them.

Everybody admires and loves the Daffodil, but comparatively few people in this country grow more than a dozen or so of the varieties of Narcissus, and even at our spring flower shows we rarely see anything like an adequate representation of the different groups into which the cultivated Narcissus is divided. No one who has not given attention to these flowers can realize how many distinct varieties it is possible to produce with the different forms and colors of the perianth or saucer, and of the tube or trumpet. Specialists in Europe are now bringing out hybrids, and although it is not to be expected that any of them will be more beautiful than the types we already have, we may expect to have a long list of varieties which are sufficiently distinct to suit every taste. The last number of the *Gardeners' Chronicle* contains a picture of a new hybrid obtained by crossing Narcissus cyclamineus, one of the group with a long cylindrical tube and narrow reflexed segments, with the Tenby Daffodil, Narcissus obvallaris, and it plainly shows the blood of both its parents. The color is a rich yellow.

Just now the planting of trees and shrubs is in full progress in this latitude, and, no doubt, a considerable percentage of all that are set out will be lost. When failures occur the blame is usually attributed to the nurseryman, and, no doubt, he is sometimes in fault; but, on the other hand, it is true that very few people who receive nursery stock have the adequate experience and knowledge for planting it properly. Too many people, who think they understand this matter completely, actually need the advice of some one of experience to ensure against failure. There is no more excuse for putting a tree or shrub into soil that is not properly prepared than there would be for a farmer to sow wheat on a field that has not been plowed. The stock to be planted has come from a nursery where it has been tenderly cared for, developed in fine rich soil which has been carefully cultivated and kept absolutely free from weeds. It is folly to expect that a young tree with such a history can be taken from all these beneficial conditions and then make any vigorous growth after having its roots cut back or doubled up to fit a post-hole into which it is thrust, especially when the hole is filled in with bits of sod. Too much care cannot be taken of young trees and shrubs after they are received. They will certainly be injured by exposure to sun and wind, and they will be sure to disappoint the planter if they are not set at a proper depth in well-prepared soil with their roots in a natural position and the earth firmly tramped about them. Any tree or shrub that is worth planting, is worth planting well.

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The Yellowstone National Park.

MUCH indignation has naturally been kindled by the stories recently published of the slaughter of the few buffalo which were nominally under Government protection in the Yellowstone Park. A late number of *Forest and Stream* contained a circumstantial account of the capture of one miscreant in the very act of skinning one of the five buffaloes which lay dead about him, and there were evidences that he had been quite as successful in his murderous work on former days. The situation is made more depressing by the knowledge that this is probably a representative case, and that other poachers are engaged in the work of exterminating the few surviving individuals of the countless herds which once ranged over the plains. More aggravating still is the reflection that no law exists for the punishment of such crimes. The fact that Yellowstone Park and the adjacent reservation have been set apart for the use and enjoyment of the people forever is really no protection to its forests or its game, but rather an advertisement to every outlaw that he can steal the timber, or set the woods on fire, or slaughter the big game, without fear of punishment. Obviously the first duty of Congress in this matter is to pass laws for the government of all our parks and reservations and then administer them in such a way that they will command respect. It is a national disgrace that property which belongs to all the people should be more unsafe than property that belongs to any one of the people.

But, while Congress seems slow to move where the case demands immediate action, there is a lobby which works without rest for measures relating to Yellowstone Park. The bills are nominally to "fix the boundaries of the park," but their real intention is to take away from it more than a million acres. The lands which they speak of adding to the park are really a part of it already—that is, they are part of the forest-reserve which properly belongs to the park and is under the same rules and government as the park itself. For years after the National Park was created thoughtful people had seen the necessity of its enlargement, better protection and maintenance, but such action was always blocked by this persistent lobby, which somehow

had power to prevent the enactment of any park law which did not give the exclusive franchise for a railroad through its north-east corner. It was said in open debate in the Senate that this alleged railway company never had a meeting; that it never had books opened for subscriptions to its capital stock; that it had never made a report nor built a rod of railway, and that under the laws of the state of Montana all its supposed rights had been long forfeited. But, somehow, it was stronger in Congress than the friends of the park, and it was not until the President was authorized in an act, which escaped the attention of these adventurers, to set apart by public proclamation certain lands for the use and enjoyment of the people, that Yellowstone Park was practically enlarged to the dimensions and boundaries laid down in Senator Vest's bill. The same lobby which for years fought every measure to enlarge the park is now equally determined in the struggle to make it smaller.

At one time it was proposed, as a sort of a compromise, to cut off the corner of the park above the north fork of the Yellowstone, but the speculators objected to this because it would permit other railroads to pass through, and what they desired was a monopoly. They now, however, propose this river as the boundary, and with a stronger lobby than ever, they come armed with so-called expert opinion to the effect that the corner cut off contains valuable minerals, and is of no value to the park; that the portion of the forest-reserve to be rejected contains land valuable for agriculture and grazing, while it is of no value to the park, and that altogether the proposed change of boundaries will facilitate the administration of the park and afford better protection to its waters and forests and game. Now, the man who ought to know something about these matters is George S. Anderson, Captain of Cavalry, who is now acting as superintendent of the park. He asserts that, with the Yellowstone River for a boundary, all the antelope and mountain sheep in the park, and many of the elk, would be left at the mercy of poachers. He adds that this north-east corner is not only of peculiar value to the park, but is actually worthless for anything else; that the large deposits of coal and minerals exist only in the imagination of adventurers, and that the little there found is in a small placer belt, and can be secured without trouble. Captain Anderson denies, too, that there is any land which can be subdued to profitable agricultural use in the part of the reservation which it is proposed to restore to the public domain. Some of it does make good grazing-land, which is the best reason for retaining it, because it is one of the few good winter ranges—nearly the only good one—for the big game in the winter-time.

The fact seems to be that no one who has any real desire to preserve our forests or game would like to see a single rod taken off of the park or of the reserve. The men who have objected to the present boundary have done so from the outset from interested and personal motives. It is the selfish ends of a few speculators against the public good. Diminishing the park area might prove a temporary benefit to a few merchants in Montana, but it would in the end prove an injury to all the surrounding country. It would gratify some lawless skin-hunters and perhaps some timber-thieves, but no right, privilege or possession of any honest man in the country, so far as we can see, will be imperiled in the slightest degree by fixing the boundaries of the park forever as they are. Here is a place for Congress to make a determined stand. If a few speculators prove that they can get away from the people 1,861 square miles of land which have been formally dedicated to their use, and can set back park boundaries which have stood for twenty years, there is no security for the newer reservations, nor for those to be hereafter established. Any expert lobbyist can find equally valid reasons for dismembering every tract set apart for the protection of forests and game. Unless we are prepared to abandon the idea that it is possible to hold for public use any land devoted to such use by national authority, Congress must save Yellowstone Park from mutilation.

Apples at the Midwinter Fair.

WHEN I was a boy on an old farm four miles from the shore of San Francisco Bay the apples we grew seemed perfect. We had many varieties, because my father was always putting in grafts of new sorts. We soon discovered, however, that few of the old standard varieties did very well, and many of them very badly. The Rambo was dull in color, mealy and dry in flavor. Baldwins were often specked and full of dry rot. The sweet apples were less sweet, and the sour apples less sour, so the old folks said, than the same kinds as they remembered them in New England. The best market sorts we tried were Yellow Newtown Pippin, White Winter Pearmain and Smith's Cider. Valley Farms like this have for years produced nearly all the apples that reach the San Francisco market. These large, juicy, but second-rate apples have become known as "California apples." But the products of the real apple country of the state were hardly known, even in San Francisco, until recently, and apple-growing in these hill-districts is likely to be as important an industry as peach-growing at a lower altitude.

At the Midwinter Fair displays, in the various county exhibits, the apples have ranked next in number and attractiveness to the oranges. Horticulturists, noting these collections, are beginning to say that perhaps there is more money in the neglected apple than in any other fruit. "Perhaps," they are saying, "perhaps we can grow these great red mountain apples, fragrant, solid and perfect, and compete in eastern markets with anything from Vermont to the Ozarks." On March 15th I notice in perfect keeping condition apples of the following varieties: Fall Pippin, Rambo, Rome Beauty, Tulpehocken, Yellow Belleflower, Rhode Island Greening. These, and many others that are really but autumn apples on the lowlands, are February and March apples when grown at elevations of from 1,500 to 3,000 feet. Judge, then, what firm and perfect specimens of such apples as Lawver, Hoover, Ben Davis, Golden Russet, Wagener, Grindstone, Virginia Greening, Northern Spy, Esopus Spitzenberg and Yellow Newtowns are now in the displays of these new apple districts. The color is so much more brilliant in these mountain apples than in those from the valley that it is often difficult to determine a variety. In Ben Davis, for example, as grown at an elevation of 2,000 feet, the streaks are of purple, scarlet and gold. Newtown Pippin in such localities often acquires a red cheek on the sunny side of the tree. Baldwin is of a clear, waxen transparency. Winesap is twice as large as the Winesap of the valleys.

The first Apples brought to California were of the varieties most popular in the New England, middle and western states in the forties. These were first disseminated in the mountain towns; next in those valley towns that traded most with the mines; lastly throughout newly developed fruit-growing districts, chiefly in the lowlands. Shasta City and Placerville, for instance, had small, though very profitable, Apple-orchards, even earlier than Marysville or Sacramento. Then large orchards were planted along the river-bottoms early in the fifties, and one after another was abandoned, as the channels filled up and the water-table rose, or as floods tore the soil away. In those days people planted Roxbury Russet, Summer Pearmain, Early Harvest, Strawberry, Minister, Maiden Blush, Beefsteak, Jersey Black, Cayuga, Red Streak, Sweet Bough, Grindstone, Hubbards-ton Nonsuch, New York Vandevere and forty or fifty other sorts, all equally old-fashioned. Sometimes they planted seeds in distant mountain-camps, where grafted trees cost five and ten dollars apiece. Oregon, less of a mining country, early became famous for its apples, and for years supplied the bulk of the San Francisco demands. In 1858 the fruit-growers used to send apples to San Francisco in three grades, two sizes for picked apples, and "windfalls or culls" for cooking. These last sold for a dollar a box of forty pounds. Different varieties were seldom kept sepa-

rate, or, if graded, other than by size, were divided into "red apples" and "yellow apples."

The display at the Midwinter Fair emphasizes in every particular the revolution that has taken place in Apple-culture. Nearly every one of the pioneer varieties has disappeared from the tables of the leading Apple-growing counties; the best of the new southern and western Apples have taken the place of the old favorites; the hardy Russians and "ironclads," so popular in Canada, Vermont and Minnesota, are not represented; there is no demand as yet for very hardy varieties of any fruit in California. There will not be any such demand until the settlers attack in earnest the great Pine-regions of the Sierras, where the winters are too severe for ordinary orchard fruits. The time is close at hand, however, when there will be a demand in portions of California for the hardiest varieties of not only the Apple, but also of the Apricot, Plum, Pear and Grape.

Apples are shown at the Fair from an old Mormon settlement in Carson County, Nevada, that are remarkable in their way. Here, on the east side of the Sierras, thirty miles from the California line, at an altitude of about 3,500 feet, in a dry, cold climate, are very famous orchards, and seedling Apples quite worthy of testing elsewhere. No larger, better-colored, more highly flavored apples have been on exhibition from any part of California or Oregon. This Sage-brush Apple district is very extensive; for two hundred miles north along the eastern slope of the Sierras—to Lassen, in fact—the pioneers often peddle bushels of apples around among the villages, for a cent a pound—apples of the highest quality and free from spot or blemish.

So varied and extensive have been the apple displays, that even old Californians note with surprise how important an industry was being neglected. The commercial development of apple-culture on the same scale as that of oranges and prunes, may be expected to date from the Midwinter Fair, and nurserymen are preparing to meet the demand.

The most interesting feature of the exhibits, however, is in the California seedling-apples, shown for the first time. There has been no organized effort to secure them, and yet about thirty new varieties have been sent in, all attractive, and some very promising, even when seen alongside such standard varieties as Yellow Newtown Pippin, Ben Davis and Hoover. The Experiment Station of the University of California is securing cions of these new sorts for its orchards. Indeed, it has been collecting Pacific coast seedling-fruits for years, and will soon publish a catalogue that will be of interest to fruit-growers everywhere. The University does not sell cions or trees, but exchanges with other experiment stations and with individuals in many parts of the world.

Niles, Calif.

Charles H. Shinn.

Exotic Trees and Shrubs for Florida Gardens.—V.

VIBURNUM TINUS (Laurestinus) is a pretty evergreen shrub from southern Europe. It grows luxuriantly in a half-shady moist position. The ovate-oblong leaves are somewhat hairy and of a dark green color. The flowers appear in flat corymbs at the ends of the branches, and are delicately scented. To make dense specimens, pruning is necessary, and this should be done in early spring. The Laurestinus under good culture attains a height of from eight to twelve feet. In Florida it flowers from November to March. It needs fertilizing and a heavy mulching. V. odoratissimum, a native of China and the Khasia Mountains, excels V. Tinus in beauty. The leaves are large, elliptic, acute and glossy green. Its habit is dense and very ornamental, and it reaches a height of ten to fifteen feet. The flowers, which are white and sweet-scented, appear in dense corymbs in May. The lower branches rest on the ground if left to themselves. I have never seen this shrub in the gardens of Florida, although it is frequently seen in New Orleans and Mobile. Mr. J. P. Berckmans writes me that it grows well in all parts of Georgia and Florida. Under the name of V. Awafuki, I

received a very fine species with somewhat cordate leaves, which are glossy green, as if varnished. It comes from Japan. It is finer and more graceful in every respect than *V. odoratissimum*.

There are quite a number of other shrubs and trees that thrive admirably in the sandy soil of Florida. *Malvaviscus arboreus* grows luxuriantly in almost any position. *Camellia Japonica* is one of the most beautiful shrubs in the gardens of Tallahassee and Pensacola, but in south Florida it needs much attention and coaxing to make it grow and blossom. In Mrs. Herndon's garden, at Sanford, I saw, late in November, a shrub of the double white *Camellia* literally covered with exquisite waxy white flowers. The specimen grew in a half-shady place and was at all times carefully attended to. Doubtless the *Camellia*, as well as the *Azalea* (hybrid of *Azalea Indica*), will flourish luxuriantly in rich peaty soil in the gardens of south Florida and in the shady hummock-woods. The Tea-plant, *Camellia Thea*, should also be included among the ornamental shrubs. Its deep evergreen leaves, dense habit and fragrant white flowers entitle it to a place in every garden where choice evergreen shrubs are grown for their beauty and fragrance. It grows well in sandy soil.

Schinus molle, the well-known California Pepper-tree, does not thrive in the sandy soil, but likes a heavy loam. The Camphor and Cinnamon trees, *Laurus Camphora* and *L. cinnamomea*, make beautiful objects and grow well in the poorest sandy soil. *Eriobotrya Japonica* also makes a handsome ornamental tree and should be in every garden, however small.

Of deciduous trees and shrubs I shall only mention a few. *Koeleruteria paniculata* grows well wherever it is planted. *Paulownia imperialis* makes a good growth if fertilized a little. *Lagerstroemia Indica* and *Melia Azederach*, var. *umbraculiformis*, Grape Myrtle and China-tree are everywhere successfully grown.

We find, as a rule, that the trees and shrubs of China and Japan, as well as those from southern Europe and Chili, grow well in Florida, while those of Australia and Mexico are rather precarious. Most of the Australian shrubs do not find the soil congenial, while many from the sub-tropical regions of Mexico and the Himalayas find the summer too warm and the winter too cold. Judging from my experiments, the trees and shrubs of New Zealand do not grow at all in Florida, while a large number from southern Brazil and the Organ Mountains flourish admirably. There are quite a number of exceedingly beautiful California shrubs which should be tested in Florida. The *Manzanita* (*Arctostaphylos glauca*), the *Madroña* (*Arbutus Menziesii*) and the California Laurel (*Oreodaphne Californica*) are especially worthy of an effort to introduce them as ornamental shrubs into the gardens of the south Atlantic and Gulf states, and especially of Florida.

Milwaukee, Wis.

H. Nehrling.

Foreign Correspondence.

London Letter.

AN unusually large number of new and interesting plants were among the exhibits which crowded the exhibition hall at the last meeting of the Royal Horticultural Society. There were also many fine specimens of popular Orchids, including a grand example, beautifully flowered, of *Dendrobium nobile-nobilus*, and another of *D. splendidissimum*, var. *grandiflorum*. A single pseudo-bulb of *D. Wardianum giganteum*, about two feet long and carrying over fifty large richly tinted flowers, and a well-flowered specimen of the distinct and beautiful hybrid, *D. Aspasia* (*Wardianum* × *aureum*), first flowered in 1890 by its raisers, Messrs. J. Veitch & Sons, were among the most striking representatives of this genus, as exhibited by Mr. Statter, of Manchester. *D. atrovioleaceum* was also shown in flower. A new hybrid, named *D. Virginia*, of Veitchian origin, which obtained a first-class certificate, is a cross between *D. Bensoniæ* and *D. Japonicum*. Although

but a small plant with a single pseudo-bulb eight inches high, upon it there were ten flowers, each nearly two inches across, in form intermediate between the two parents, and in color milk-white, with a blotch of dull purple and a tinge of emerald-green on the lip. *Phalænopsis Vesta*, the hybrid raised by Messrs. Veitch from *P. rosea*, var., and *P. Aphrodite*, was shown and obtained an award of merit. It is better in color than *P. rosea*, the flowers over an inch across, pale rosy-mauve, the front lobe of the lip trowel-shaped, with a pair of short antennæ at the apex and colored dull purple, the side lobes paler, with numerous red dots. *Cymbidium eberneo-Lowianum*, bearing two flowers, also came from the Veitchian establishment.

An attraction of a special kind was a group of *Dendrobium Phalænopsis* shown by Messrs. F. Sander & Co. The exquisite beauty and variety of form and color revealed in this grand Orchid are such as to have won for it already a place among the very best of garden Orchids. Grown in a hot moist house, it has proved quite easy to manage. Several well-flowered plants of *Cypripedium Rothschildianum*, a beautiful variety of *Lycaste Skinneri*, named Mrs. H. Ballantine, which was awarded a certificate on account of its large size and pure white segments and rich rosy-purple of its labellum; *Dendrobium Imperatrix*, with stout tall pseudo-bulbs and erect spikes of white flowers, suggestive of *D. undulatum* or *D. stratiotes*, *Spathoglottis aurea*, which is grown exceptionally well at St. Albans, and a magnificent example of *Odontoglossum Edwardii*—these were conspicuous in the St. Albans exhibit; but the most remarkable of all was a new hybrid *Phajus*, called *Marthæ*, the result of crossing *P. Blumei* and *P. tuberosus*, and which may be described as a *P. Cooksoni*, with sepals and petals colored pale buff-yellow. It is a decided acquisition. Baron Schroeder sent a spike of his *Odontoglossum crispum apiatum*, which is, perhaps, the most strikingly beautiful of all the many forms of this grand Orchid. The spike measured two feet in length, and it bore thirteen flowers, each of which was fully four inches across, the sepals and petals an inch wide, very crisp and wavy all round the edges, while the colors, white, with large blotches of rich chocolate-brown, and a tinge of yellow about the crest of the lip, were perfection. It is such flowers as this that justify the use of such terms as "queenly" for Orchids. The Society awarded it a gold medal. *Vanda Cathcartii* was represented by four spikes of its large, fleshy chocolate-brown zebra-marked flowers, all from the garden of the Earl of Cork, at Frome, where this rarely flowered *Vanda* is exceptionally well grown. *Trichopilia saavis*, in a nine-inch basket, bore no less than thirty-seven of its large fragrant white and rosy-mauve flowers.

CÆLOGYNE MOSSLE, said to be a new introduction from Ceylon, was awarded a first-class certificate, and was accepted as a new species. It is in the way of *C. ochracea*, having short ovate pseudo-bulbs, lanceolate leaves six inches long, and a short curved raceme of six flowers each, nearly two inches across, well formed and pure white, with a blotch of yellow on the lip. It is a distinct and pretty little plant.

MASDEVALLIA GARGANTUA, a rare species, with the foliage of *M. elephanticeps*, and a large fleshy flower of unattractive form and color, was shown in bloom, and while its maw-like yellow and crimson-purple flowers arrested attention, they were generally called ugly. In addition to its unpleasing appearance, it has also a strong repellent odor. Still, for a *Masdevallia*, it is a most remarkable plant, deserving to rank with *Stapelias*. Next to it stood a fine example of the elegant *Cirrhopetalum picturatum*, carrying four scapes, each supporting a whorl of about ten flowers. Both of these were exhibited by Sir Trevor Lawrence, who also sent a plant of *Bulbophyllum Sillanianum*, which was described by Reichenbach in 1884 from a plant introduced from Burma, but is still very rare. It has roundish pseudo-bulbs an inch long, leaves five inches long by half an inch in width, and slender one-flowered scapes as long as the leaves, the flower being over an inch

across and remarkable in having the three dorsal segments erect and the two lower ones horizontal, their color being bright yellow, with lines of green. The lip is small, delicately hinged and purplish in color. *Odontoglossum excellens chrysomelanum*, also from Sir Trevor Lawrence, was awarded a first-class certificate. It is remarkable for the clear yellow and the almost crimson color of the blotches of its segments. *Dendrobium Sybil*, a hybrid between *D. Linawianum* and *D. bigibbum*, raised by Mr. Cookson, was deservedly awarded a first-class certificate, its purplish-yellow-throated large flowers being both distinct and attractive.

The following plants were among the miscellaneous exhibits: *Andromeda Japonica*, a group of bushes six inches high, clothed from top to bottom with large panicles of Lily-of-the-valley-like flowers—perfect cascades of white bells. *Bignonia venusta*, shown from Lyon House, where this grand greenhouse climber has been a feature for many years. Its long string-like shoots are clothed to a length of several yards with bunches of large tubular orange-yellow flowers. It is one of the finest of the genus. *Rhododendron albicans*, a hybrid between *R. mollis* and *R. occidentale*, raised about ten years ago by Mr. A. Waterer, was shown in flower, and obtained an award of merit. It is exactly like *R. mollis* in foliage and size of flowers, which are pure white, with a blotch of lemon on the upper segments, and are produced in large full trusses.

FERRARIA ANTHEROSA is a singular-looking Irid from the Cape, with stems two feet high, clothed with fleshy amplexicaule leaves and greenish purple, Iris-like flowers. It is grown at Kew, and is interesting to those who are botanically inclined.

RHODODENDRON RACEMOSUM, from Messrs. J. Veitch & Sons, is a delightful little pot-shrub, which is said to be hardy at Coombe. It is less than a foot in height, and has Box-like foliage and numerous compact little trusses, two inches in diameter, of white flowers with pink tips. It is a distinct and promising little plant, for the introduction of which we are indebted to the French horticulturists, who obtained it from Yun-nan.

LOROPETALUM SINENSE is a rare little shrub, related to *Hamamelis*, with alternate ovate leaves an inch long and clusters of flowers with long, narrow, whitish petals. It might be made a useful plant for the cold greenhouse. It is a native of China, and is not hardy here. Messrs. Veitch showed a basket of nice little specimens of it covered with flowers.

SHORTIA GALACIFOLIA was shown in finer condition than I had ever before seen it, plants in small three-inch pots, and no larger than a man's fist, carrying about twenty pure white, nodding, fringed bells. It is a charming little alpine, hardy with us, and I learn it is likely soon to be abundantly represented here, one garden alone possessing a large frameful of healthy, newly imported plants.

STREPTOCARPUS WENDLANDII.—A group of this distinct new species was shown by Messrs. Sutton & Sons. It is remarkable for the size of its single leaf, which rivals that of *S. Dunnii* in size, but differs in being less wrinkled and in being purple beneath. The flowers are borne on erect stout scapes two feet high, freely branched and clothed with a perfect sheaf of violet-purple white-eyed flowers one and a half inches across. The introduction of this plant is mysterious. About eight years ago a chance seedling came up in the fernery at Kew. It was soon seen to be distinct, and in two years its single leaf was three feet long by two feet in width. When it flowered it was thought to be a variety of *S. Saundersii*, of which there is a figure in the *Botanical Magazine*, t. 5251. About three years ago it was offered by a Continental nurseryman under its present name. There are some fine plants now in flower at Kew which are hybrids between it and *S. Dunnii*. The flowers are large, not unlike those of *S. Wendlandii* in shape, but colored deep magenta.

VRIESIA REX, a hybrid or seedling shown by Monsieur Duval, of Versailles, received an award of merit on account

of the deep, uniform crimson color of its large imbricating bracts, which contrast prettily with the yellow flowers. It belongs to the same set as *V. psittacina* and *V. Morrineana*.

BLUE PRIMROSES were shown by Mr. G. F. Wilson, a collection of some three dozen flowers of various shades of blue, plum-blue, lavender, etc. There are true blues among them.

London.

W. Watson.

New or Little-known Plants.

Prunus Watsoni.

FOR a shrubby Plum which has been growing in the Arnold Arboretum since 1880, when it was raised from seed sent from Ellis, Kansas, I propose the name of *Prunus Watsoni** (see page 135), in honor of Dr. Louis Watson, of Ellis, a brother of the late Sereno Watson, through whom I first became acquainted with this plant.

As it grows in the Arboretum, *Prunus Watsoni* is a twiggy shrub three or four feet high, with slender, rigid, zigzag branches which are bright red and lustrous during their first year, and later growing darker, are marked with pale lenticels, and develop spur-like lateral branchlets. The winter buds are acute, an eighth of an inch long, and are covered with many closely imbricated, light chestnut-brown scales; those of the inner ranks are accrescent, and at maturity are half an inch long, three-lobed, with small acute lateral lobes, and a larger terminal lobe, rounded at the apex, and remotely crenulate-serrate. The leaves are an inch to an inch and a half long, half an inch to two-thirds of an inch wide, thick and firm, lustrous on the upper and pale on the lower surface, with slender midribs, obscure veins, and bright red petioles half an inch in length. The flowers, which appear about the middle of May, are very fragrant, and are produced in the greatest profusion, quite covering the branches; they are borne on slender glabrous pedicels a quarter of an inch long, in crowded three to four flowered fascicles, and when expanded are half an inch in diameter. The fruit, which ripens in great quantities, and sometimes hangs on the branches late into the winter, is two-thirds of an inch in diameter, with a thick bright orange-red skin without bloom, and bright yellow juicy flesh, which, although slightly austere, is edible, and sometimes of good quality.

It is this plant which is the Sand Plum of southern and south-eastern Nebraska and central Kansas, where it forms thickets in low sandy soil near streams. On the banks of the Saline River, where, ten or twelve miles from Ellis, it is very abundant, the plants vary from three to ten or twelve feet in height; on some individuals the fruit ripens early in August, and on others as late as the 1st of October. The Sand Plum is occasionally planted in the gardens of central Kansas, and the wild fruit is gathered in large quantities and sold in the towns.

Prunus Watsoni has been mistaken by travelers in the trans-Missouri region for *Prunus angustifolia*, the Cherokee Plum, from which it differs in habit, in its thicker leaves, thicker-skinned fruit and smaller stone, the stone of *Prunus angustifolia* being less deeply pitted, thick-margined on the ventral suture, conspicuously grooved on the dorsal suture, and less abruptly flattened at the apex.

The hardness of *Prunus Watsoni* in regions of extreme cold, its compact dwarf habit, abundant flowers and handsome fruit make it an ornamental plant of first-rate value, and as selection and good cultivation will doubtless improve the size and quality of the fruit, it will, perhaps, become a valuable inmate of small fruit-gardens. C. S. S.

* *PRUNUS WATSONI*, n. sp.—A shrub six to ten feet high. Leaves, ovate, acute, rounded or wedge-shaped at the base, finely crenulate-serrate, lustrous on the upper, pale on the lower surface; petioles slender, grooved, bi-glandular at the apex. Flowers in crowded few-flowered fascicles; calyx cup-shaped, the lobes acute, rounded at the apex, eglandular, ciliate on the margins, pubescent on the inner face; petals inserted remotely on the glandular disk, narrowly obovate, rounded and more or less cross above, contracted below into short claws, pure white; filaments glabrous; anthers minute, obtuse, yellow or bright red; style slender, exserted. Fruit globose, or rarely oblong, orange-red; putamen turbid, rounded on the ventral suture and rounded and sometimes obscurely grooved on the dorsal suture, abruptly compressed at the narrowed apex, thick-walled, conspicuously porulose.

Cultural Department.

Patience with Germinating Seeds.

EVERY seedsman is familiar with the complaint of "bad seeds" which comes from customers every season, and almost every seed-sower at some time has annoyance with seeds which refuse, or seem to refuse, to grow. The fault does not always lie with either one party or the other. It is true that seedsman are not always as careful about the vitality of their seeds as they should be, but, on the whole, first-class firms are to be trusted. The temptation to keep unsold seeds for sale year after year is great, and these are too often mixed with the fresher seed. Country general stores are especially likely to keep their seeds over, just as nails or thread would be kept, and many seeds lose their vitality by long keeping. But the fault is not always with the seller, for the fact that the seeds are a little old and dry in some cases means that they

Many seeds require proper cleaning from fruity coverings before they will germinate well and give satisfaction, and, as is well known, exposure to the action of frost and moisture or soaking in warm water will often hasten seeds in starting into growth. With regard to the *Symplocos*, it may be assumed that not one per cent. of the large quantities of seeds sent from the Arboretum during a number of years, have been known to germinate, and in most cases they have been discarded as worthless after the first season's trial.

Certain kinds of Maple-seeds will grow the following spring if planted soon after they are ripe, but if allowed to dry, which is generally found expedient when they are to be shipped long distances, they are not likely to germinate until the second year. As our Red and White Maples ripen their fruits in May or June these seeds will produce nice little plants before autumn, if sown in moist soil as soon as mature. This is also true of the Elms and of the Red Birch (*Betula nigra*), which ripens its fruit in June. The seeds of most Ashes (*Fraxinus*)



Fig. 25.—*Prunus Watsoni*.—See page 134.

will simply take a little longer to germinate than they would if sown while fresh. Then there are some kinds of seeds, notably those of certain kinds of trees and shrubs, which naturally remain dormant for a season before they germinate, and then the seedlings may continue to appear during several months. It is this tardy germination which has often caused planters to destroy valuable sowings with the idea that the seeds were worthless.

A valued correspondent in Germany, who shows great enthusiasm in the cultivation of hardy plants, has written that he has made many attempts to raise the *Symplocos crataegoides* from seed received both from Japan and from the Arnold Arboretum, and always failed to get any seedlings. Finally he gave the seeds a longer chance, and at last is rewarded, and writes, "Seed planted in a box December 5th, 1891, first began to send up little seedlings in October, 1893. Both winters the box has been outside covered with snow, and now I have placed the box in warm quarters, where young plants spring up every now and then."

will take a good while to germinate if allowed to become unnecessarily dry. It is usually the second year before the little seedling plants of the Tulip-tree appear from the artificially sown seeds, or, technically, fruits; but, as usually about nine-tenths of these latter contain no true or fully developed seeds, only a small proportion of the sowing can be expected to result in plants.

Very often the same lot of seeds will be found to germinate unevenly, new plants appearing during a period of many months and with an interval of a winter between. This peculiarity is often seen in sowings of Apple-seed which had been allowed to dry a good deal before planting. Hard-shelled seeds of Leguminous trees, like Kentucky Coffee-tree and Honey Locust, may be expected to rest a good while in the soil before they start into growth, unless they have previously received special treatment. Those seeds which are surrounded by a hard bony covering may commonly be expected to grow in the second rather than in the first year, especially if the seed is not planted until spring. Among these are Haw-

thorns, some Roses, Dogwoods or Cornels, Tupelos, Viburnums, Styrax, Halesia or Silver-bell, Hornbeam, Hop-hornbeam and the Winterberries (species of *Ilex*) and Hollies. Some of the Holly-seed may not germinate until even the third year after it has been in the ground, so that the seed-bed should not be too hastily destroyed.

In planting any seed it is generally safer to commit the error of covering with too little soil than with too much. Light seeds are often covered so deeply that the little plantlet cannot reach the surface, and it would have been even better to have sown the seed on top of the ground. In most cases the chief advantage of deep covering lies in the fact that the seeds are likely to obtain more equable moisture, but the surface of no seed-bed should be allowed to become really dry, because if the seeds have started into growth and dryness overtakes the young plantlet before it has formed and sent down good rootlets, it is only too likely to dry and shrivel beyond recovery.

Arnold Arboretum.

J. G. Jack.

Work in the Flower-garden.

PROTECTIVE coverings for flower-beds have not been of so much value during the past winter as in some seasons, owing to the heavy coat of snow that has remained on the ground all winter. The ground did not freeze at all in many places, and the growth of all bulbous plants will consequently be well advanced. To-day I examined some Lilies in the *Rhododendron* bed, upon which a mass of leaves had been placed, and growth above ground had already begun, so that great care was necessary in removing the litter. The same is also true of the *Narcissus* bed; formerly a covering for these plants was not thought needful, but some of the Spanish *Daffodils* do not come up strong after a hard winter, and we now cover the whole bed in the fall after the ground has frozen a little.

In this section but few plants have yet begun to move in the borders, but as soon as they do, any transplanting that needs attention should be done without delay. It is best to wait until plants start to grow before disturbing them, as they then start off more freely after the shift. Herbaceous plants raised under glass must be carefully hardened off before setting them out, for indoor treatment makes them tender.

In the cultivation of *Hollyhocks*, we find it best to raise a new lot each year and to set them out in their permanent places in spring in well-prepared soil. There is thus a chance to protect them in the fall; no loss is sustained from winter-killing, and there is little check from spring transplanting. After *Hollyhocks* flower once, they are easy victims to severe cold alternated with thaws, and they are not to be relied upon the second year. The sowing for the following year's display should be made in the latter part of July. The same treatment applies to *Canterbury-bells* and *Pansies*; these are now being transplanted to the open borders where they are to flower, and between each, later on, will be planted annuals, such as *Zinnias*, *Asters*, or *Stocks*.

The larger portion of our *Japan Anemones* are grown in pots for the greater security of the bloom in fall. These are stored away in a cool cellar, and they often freeze during the winter; this does them no harm, but checks very early growth in spring. They are all starting now, and will soon be taken outdoors where a little protection can be given them on cold nights. *Tritomas* (*Kniphofias*) are treated in the same way; this early start assures an early blooming season and escape from premature fall frosts.

Sweet Peas can never be sown too early, though the mistake is often made of sowing them too late. They should be put into the ground at once. It is often difficult to carry *Sweet Peas* through the hot season, as they are very susceptible to drought. This was our trouble last year, and in trying to avoid a repetition we have dug a deep trench, and after taking out the sandy subsoil, replaced it with clay and filled in with good manure mixed through the better top soil. With occasional watering, we hope in this way to overcome the effect of the hot weather. Great advances have been made of late years in the quality of *Sweet Peas*; the difficulty now is to know which kinds to choose out of so many. We never depend on novelties, but always take well-known kinds of desired colors, when results may be counted upon.

An old but fine bedding-plant, too seldom seen, is *Perilla Nankinensis*. The rich dark foliage makes a fine background for a wide border, and the color keeps good throughout the season. A packet of seed will provide a large number of plants, and it is as easy to raise as most annuals. The foliage is a rich dark purple, and it is beautifully lacinated.

Roses have wintered better this year than I have ever known them to do; few gaps need filling, and even such kinds as *La France* and *Duchess of Albany* are in good vigor without any protection whatever, though their lack of protection was an oversight last fall. Spring is the best time for making new *Rose-beds*. Experiences in fall planting, even of American-grown *Roses*, have only served to emphasize this fact. Where large beds of hardy *Roses* are grown in the flower-garden it is always best to keep a few in the reserve border to supply any losses; these should all be lifted and replanted every spring, so as to keep their roots from spreading too much. Frequent transplanting will keep a *Rose* in fit condition to move for years, and this is especially true where they are wanted in fall for winter forcing in pots or boxes. Outdoor *Rose-culture* is rather discouraging at times; *rose-bugs* seem to get the upper hand each year, no matter what is tried by way of prevention, and I am satisfied there is no cure; nothing seems to avail except hand-picking.

Cannas take a prominent part in all outdoor flower-gardening, and their full value is only beginning to be recognized. The newer kinds that have appeared in the last year or two will give a great stimulus to their use; such sorts as *Star of 1891*, *Madame Crozy*, *Alphonse Bouvier*, *Florence Vaughan*, *Captain Suzzoni*, *Charles Henderson*, *J. D. Cabos*, *Paul Bruant* and others have rapidly made names for themselves, especially at the World's Fair last summer, where they made one of the principal horticultural features. Roots ought to be started now, ready for planting out in June; the best results are obtained when the roots are well established in six-inch pots before planting-time. There is then no delay after planting, and they quickly furnish the space they are to fill. *Cannas* also make ideal subjects for planting in tubs or boxes for summer use near the house. For this purpose only the dwarf large-flowered kinds should be used, taking care to have rich soil and to feed them liberally as the season advances, for they are strong feeders.

South Lancaster, Mass.

E. O. Orpet.

Summer-flowering Carnations.

ALTHOUGH the border varieties of *Carnations* which do so well in Europe, prove disappointing here as a rule, there are a few American-grown kinds of the perpetual-flowering section which bloom successfully out-of-doors with us in the summer months. While the *Marguerite*, *Grenadin* and some other varieties bloom from seed sown in spring, and usually come double, they do not produce as large nor as fragrant flowers as may be obtained from a small assortment of early propagated greenhouse varieties.

To produce strong plants fit to set out early in May the proper time to put in cuttings is in December and January. When well rooted, pot off into small pots, and transfer from these again to three-inch pots about the end of March. The plants should be grown along in a cool house, and early in April may be placed in a cold frame. Here we plant outdoors about May 15th in rows one and a half feet apart, allowing the plants one foot in the rows. No topping should be done after the end of May if early flowers are desired. When the bloom-spikes are well advanced they must be staked, and it is well to look over the plants once a fortnight and tie up shoots requiring it. A mulching of fine well-rotted manure, and occasional waterings in dry weather, is beneficial. We generally have flowers early in July, and from then until the end of October, or until a sharp frost. Plants which had bloomed all summer were last fall lifted in full bloom and planted in the *Carnation-house* along with those specially grown for winter blooming, and these have flowered fully as well as any of the others.

Last season we tried *Lizzie McGowan* and *Mrs. Fisher* for white flowers; the latter proved to be the finest variety in the whole section. *Lizzie McGowan* bloomed a little, but not enough to warrant its use again. Among scarlets, *Hector* easily took the lead; *Florence*, a less brilliant-colored kind, flowered fairly well, but *Portia* was useless. *Golden Triumph* and *Louise Porsch* gave an occasional bloom, but did not pay for the ground occupied, and both rusted so badly that we have discarded them. *Grace Wilder* was the only pink variety giving any bloom, and as it also is affected by rust we will not give it a further trial. Last summer we noticed a very fine bed of *Nobscot*, a scarlet seedling of Mr. Nicholson's introduction, at Framingham. The plants were a mass of bloom all summer; the flowers are smaller than those of *Hector*, borne on stiff stems, and do not burst the calyx. This variety is a decided acquisition, and we purpose growing it next summer. Possibly the new pink *Carnation*, *Ada Byron*, may prove a good summer bloomer, as it possesses many of

the properties of Mrs. Fisher. This variety with Nicholson and William Scott we shall try this year, and hope one of the trio will prove a success. They seem to be rust-proof so far, which is more than can be said for some other novelties. Hector, Mrs. Fisher and Nobscot have shown no signs of disease. Ferdinand Mangold as a crimson was not a success, but we purpose giving it a further trial; it appears to be rust-proof.

A good pink variety for outdoor blooming is what we most desire to find at present, one that will bloom as freely as Mrs. Fisher, Hector and Nobscot. No doubt, a yellow and crimson will turn up in due course, and it will then be possible for any one to have fine Carnations grown in the open air for three months in the year.

Taunton, Mass.

W. N. Craig.

Celery Culture.

AT a meeting of the Michigan State Horticultural Society, Professor W. W. Tracy delivered an off-hand address on "Celery Culture," in which he stated, at the outset, that any farmer in Michigan who fully understood and carefully attended to the character and wants of the plants could raise in his home-garden better celery than can generally be bought in the market. This special knowledge is at the base of all successful garden practice, being generally a more important factor than any natural advantage, and Professor Tracy went on to say:

There is nothing in the soil and climate of Long Island which gives it any superiority for the cultivation of flowering bulbs, but the Long Island growers produce better and cheaper bulbs than others, because they understand their plants. The profits of Onion-growing about Painesville, Ohio, is due in the same way, not to the soil, but to a perfect knowledge of the character and wants of the plants. Certain grades of Celery can be produced more cheaply on the muck lands of Kalamazoo, but Celery of the finest quality can be grown on almost every farm in Michigan.

Yesterday we took out some celery on our trial-grounds. Many of the stalks were eighteen inches long, many an inch in diameter, and so brittle that I could and did take a stalk by each end, and by a quick move of the hands, in opposite directions, snap a piece out of the centre, whose ends were as square as if they had been cut by a knife. Those who used it say they don't care to eat any that they can buy, after having this. And yet, this was grown on a clay soil that, six years ago, would make brick; and if Celery can be grown on that, perhaps as poor a soil for its growth as can easily be found, every Michigan farmer ought to grow it. They certainly can, if they know how; and to know how they must study the plant.

Every flavor or scent, if intensified sufficiently, becomes disagreeable. Thus the intense flavor of the green portion of the celery is disagreeable, bitter, and in some degree poisonous. When any vegetable growth is made rapidly, and in the dark, it becomes white, and its natural flavor is lessened, made more mild; and in such cases as the leek, endive and celery, made much more agreeable.

Again, crispness, succulency and tenderness in vegetables are developed in proportion to the rapidity of growth. What we need, then, to produce well-flavored, crisp, succulent, tender celery is a rapid growth in the dark. How can we do this? Celery is a very peculiar plant in its habit of growth. If we plant an ounce of Celery seed under favorable conditions, it will be nicely up in thirty days, and if we wash the little plants clean of earth they altogether will weigh from five to twenty ounces, an increase of from five to twenty fold in the first thirty days.

Now, plant an ounce of any of the quick-growing Radishes, under equally favorable circumstances, and in thirty days they will be fit to market, and the 3,500 roots produced, if every seed makes a plant, will weigh from 2,000 to 4,000 ounces, an increase in the first thirty days of from 2,000 to 4,000 fold, against the Celery's increase of from five to twenty fold. This shows how slowly the Celery-plant grows at first. But, with every succeeding month, not only the actual growth, but the rate of growth, increases until, as it approaches maturity, it is, perhaps, the most rapidly growing plant in the garden. But you all know that growth necessitates food, and in this fact we find a reason for our plant's action; for, during the slower-growing, earlier periods, the plant was not only extending its root-surface and putting itself in position to collect enormous quantities of food from the soil, but was also storing in the roots and the thickened collar at the base of the leaves an

extra supply of food to be used on demand. We see how the life-plan of the plant fits with our purpose of securing a rapid growth in the dark. We simply wait until it is prepared to grow most rapidly, and then gather and hold the leaves up so closely as to shut out the light and keep the growing leaves of the centre in the dark, and our object is accomplished. This we do by first drawing the leaves into an upright position and holding them there with earth. Then, drawing them still closer and banking them with more earth, until we have completely shut out the light from the now rapidly growing centre, we secure the white, crisp, tender central leaves which are so delicious.

It is a mistake to think that earthing-up turns the leaf-stems which we earth-up white, and makes them crisp. It does not. It only makes those that grow after we earth-up white and crisp, and you can thus see how useless it is to expect good celery from slow-growing plants.

But, to have quick growth, we must have abundant food in the soil, abundant water to dissolve this food, and abundant roots and vitality to convey it into the plant. The golden rules, then, for growing fine celery are:

1. Secure strong plants, by protecting the weak and slow-growing seedlings from injury from overcrowding or from more rapid-growing weeds.
2. Set the plants in soil which is as rich as it can possibly be made. The best rule for it is that for making the mince-pies we used to dream over at Thanksgiving-time—make them as rich as you can afford, and then shut your eyes and drop in two handfuls more.
3. Bank up and give plenty of water when the plants are in their greatest rapidity of growth.

Correspondence.

Earth-worms in Flower-pots.

To the Editor of GARDEN AND FOREST:

Sir,—I have a Fuchsia and a small Hydrangea in pots, which have looked fairly well during the winter, but they are now gradually losing their leaves. A friend suggested that earth-worms might be eating the roots, so I have transplanted them and find a dozen or fifteen worms in each pot. Is it true that these worms eat the roots or injure the plants in any way?

Boston, Mass.

K. L.

[As a rule we should look upon earth-worms as useful creatures and their work as of real service to tillers of the soil. They are continually renewing the surface-soil with finely pulverized earth brought up from below, and their burrows allow freer access of moisture and air. They are, in fact, true subsoilers, and we may get a good idea of the important part they play on the earth's surface by reading Darwin's *Vegetable Mould and Earth-worms*.

The action of worms also tends to hasten the decay of vegetable and other remains in the soil, and so to prepare them for assimilation as plant-food. But when very numerous they are often troublesome, especially on small areas, as in flower-beds and in flower boxes and pots. Too numerous holes allow access of too much air to the roots; the tender roots themselves are disturbed and, perhaps, destroyed by the worms; and as it is known that the castings or excretions of worms are charged with certain acids, these may have an injurious effect when too abundant.

It is the habit of worms to come to the surface in the evening, and if the soil is well-watered and the previously darkened plants are quickly examined by light the worms may be found and caught on the surface. Watering the soil with strong lime-water is said to drive them out, and a weak solution of ammonia or of smelling-salts will bring them to the surface, when they may be easily caught. Strong tobacco-water would probably answer the same purpose.

If care was taken to subject potting-soil to strong heat before using, or to treat it with boiling water, all worms and other insects and their eggs would be destroyed and there would be no trouble from them. Where only a few plants in pots are affected it would be a simple matter to repot them with fresh soil which had been previously thoroughly heated in the oven, or scalded with water and allowed to drain.—Ed.]

Forest-growth.

To the Editor of GARDEN AND FOREST:

Sir,—In your correspondence columns of issue February 7th Dr. Hoskins gives some interesting experience of his plantings, and finishes up with some quotations from *The Vermont Farmer*, in which it is made to say that a Pine plantation of seventy-five years' growth produced from 40,000 to 50,000 feet of timber per acre. This does seem an enormous yield for so short a period, and quite beyond anything that can be grown on this side. In looking over a well-grown Scotch Fir wood of ninety years' growth a few days ago I was satisfied there was not more than 5,000 cubic feet to the acre. The situation was somewhat exposed, however. I see, also, on turning up a copy of the charts used in the Danish schools of forestry, that the average contents of an hectare of Fir at eighty years' growth is 660 cubic metres, which will be equivalent, speaking roughly, to something like 6,000 feet to the acre. We expect much better results, however, from the Douglas Fir, but it has not been sufficiently long planted yet, nor in such quantities as to state accurately for purposes of comparison its timber-producing capacity here; suffice it to say, however, it is one of the best American introductions, and grows about as fast again as the Scotch Fir on good soil.

My object in writing you, however, is to express my pleasure on reading an account in your paper a few weeks ago of some planting by Mr. Robert Douglas, I believe, in Kansas. It struck me at the time that if this methodical plan could be carried out on the American and Canadian prairie to some appreciable extent, it would very soon improve the aspect of the country immensely. If timber could be produced at one-quarter the rate before mentioned it would pay the farmer well; besides, the break afforded in these northern regions in checking blizzards and hot winds would also prove invaluable. Mixed farming must ultimately be the method which will give the safest return, and one succeeds much better with wood at hand for farm-buildings and for sheltering stock. The Douglas Fir might succeed well out there. The European Larch has been a great success in this country for fencing purposes and farm-buildings. The great north-west is the quarter to which thousands in the old country look for a home, and every facility should be afforded to make it, at least, more pleasant. And next to a plan of regenerating the fine natural forests on the American continent, would be some judicious prairie planting.

Blinkbonny, Earliest, Scotland.

W. W. Robertson.

[In this country it is the practice to estimate timber by board measure, and not in cubic feet. In America 50,000 feet of timber means 50,000 square feet of boards one inch thick. So that the growth recorded by *The Vermont Farmer*, although heavy, is not so enormous as it seems to Mr. Robertson, and does not differ materially from the European instances cited in his letter.—Ed.]

Russian Apples.

To the Editor of GARDEN AND FOREST:

Sir,—I observe that in your issue of March 7th Mr. Jack gives Charlottenthaler as a synonym of Yellow Transparent. This is hardly correct, and an error like this should be arrested before it leads to trouble. The facts are that Charlottenthaler, Grand Sultan and Yellow Transparent belong to one family, and their fruits resemble each other closely in appearance, though they differ in quality, and they do not ripen at exactly the same season. I have grown and tested them carefully together. Yellow Transparent is the poorest of the three in quality, but it is the only one of much commercial value because the other two are subject to a bark blight which destroys the trees almost before they come into bearing. Most of the prominent Russian Apples are grouped in families, and are more or less closely reproduced from seed.

Newport, Vt.

T. H. Hoskins.

Dangers from the Pride of China Tree.

To the Editor of GARDEN AND FOREST:

Sir,—The article on page 92 brings to mind certain experiences of mine, when, as a young girl, I spent some time on a South Carolina plantation. The only trees nearer the house than the long avenue of approach were an immense Crape Myrtle, and a little farther away a fine Pride of China Tree. Under this tree the boys of the family, not too much my juniors to invite me to share in some of their escapades, found,

when its berries were ripe, an occasional prize. They were quite in the habit of picking up birds which had eaten these berries to their destruction, as they were summarily served and eaten at certain irregular picnics. As I was told, the birds became intoxicated from feasting upon this too stimulating and delightful food, of which they were evidently inordinately fond. Having eaten heartily, they would fall to the ground, overcome; in this condition they were picked up, their necks wrung, and after being plucked and wrapped in a shaving of bacon were suspended from a bent stick and roasted before a surreptitious fire. After this process they were eaten with infinite zest. Occasionally, by great watchfulness on the part of a squad of small negroes, quite a string of birds would be collected before the "young masters" came out of the school-room.

The birds, if left to themselves, soon recovered, and took themselves off, with a headache, perhaps. At all events, that the inebriated birds could be eaten without any injurious effect, save a slight prick of conscience, I am abundantly able to testify.

Amherst, Mass.

D. H. R. G.

Recent Publications.

The October and November issues of the *Bulletin of Miscellaneous Information* of the Royal Gardens at Kew, contain a most interesting paper on a botanical journey along the Sikkim-Thibet frontier, made by Mr. G. A. Gammie, an assistant in the Government Chinchona Plantations at Mungpoo. The article is made specially interesting by the publication in the same number of the bulletin of a letter written to the Director of the Royal Gardens, by Sir Joseph Hooker, who, more than fifty years ago, explored this very region and first made known the character of its vegetation.

In writing on Mr. Gammie's report, Sir Joseph says:

The perusal of it strengthens in me the opinion which I have long entertained, but which I have never formulated, that Sikkim, for its area, presents one of the richest, if not the richest botanical region on the globe. And further, that though no more than about forty miles from east to west, and one hundred from north to south, and situated beyond the northern tropic, I believe that when all that is known of its vegetation shall have been brought together, it will prove to be a better microcosm of the flora of the globe than any other area of equal or even of much larger dimensions. Thus, in its alpine region, the floras of the European, Siberian, Chinese and American mountains are all richly represented, and there also are found the principal types of the steppe and desert vegetations of Thibet and central Asia. In its temperate region European genera abound in species in greater numbers than they do furthest west in the Himalaya, or probably than they do further east in the same range, where different climatic features prevail; and in the same region types of Chinese, Japanese and North American genera appear in force, which rapidly disappear in advancing toward the western Himalaya. Lastly, in the tropical region the Malayan flora disputes precedence with those of the plains and lower hills of the Indian continent, Burma and Ceylon, as represented by genera and species, many of which are also characteristic of tropical Africa.

Some idea of the vegetation of this region will appear from the following extracts from Mr. Gammie's paper, which we commend to every one interested in botanical geography, and to the aspects of vegetation in one of the most interesting forest-regions of the world:

The Singalelah range is an elevated mountain pass, springing from the face of Kinchinjunga, and extending southward to the plains of India. Owing to the facilities of traveling afforded by the Nepal frontier road to Phalut, the range so far is much frequented by general travelers, and is, in consequence, too well explored to induce one to linger on the way in search of novelties. Some Yew-trees, *Taxus baccata*, grow close to the road beyond Tonglu, and *Abies Webbiana* is first seen on the last ridge between Tonglu and Sandakphu; from thence onward it exists in profusion up to 13,000 feet in elevation, covering mountain-sides with dense and sombre forests. There are trees of *Tsuga Brunoniana* below Phalut, and *Juniperus Pseudo-Sabina* abounds near the path to Cheabhanjan; but the other species of conifers, so characteristic of drier Sikkim, are altogether absent. Above 11,000 feet the most notable plants are *Aconites* and *Meconopsis Wallichii*, and a few species each of the genera *Ranunculus*, *Anemone*, *Poten-*

tilla, Primula, etc. *Fragaria Daltoniana* occurs here and there, bearing narrow oblong fruits, reminding one of small strawberries, and resembling them in flavor. The road from Sandakphu to Phalut passes through a forest of *Abies Webbiana*, associated with *Pyrus foliolosa*, *Betula utilis*, *Acer caudatum* and *Prunus rufa*, etc.; underneath them are thickets of various *Rhododendrons* and of two species of Bamboo.

On the slopes immediately below the summit of Phalut arboreal vegetation is scanty, and confined to sheltered ravines. The ground is everywhere covered with a sward of herbaceous plants. *Anemone rivularis*, with blue and white flowers, predominates. *Primula rotundifolia* and *P. Sikkimensis* (the latter affecting marshy situations in company with *Calathoes palmata*) are common. *Meconopsis Wallichii* is extremely abundant. The Bhutias eat the young stems of this plant, and the shoots of a *Polygonatum* are much esteemed by the Gurung shepherds. The young shoots of Bamboos are cooked and eaten. *Rheum acuminatum* is prevalent throughout the whole of alpine Sikkim, but is not utilized as food. *Allium Wallichii*, which is equally abundant, is consumed largely, sharing with the common onion the reputation of being an efficacious antidote against the physical discomforts experienced by men and animals at high elevations.

From Cheabhanjan onward to Kinchinjunga the only available path is that used by the shepherds, who pasture their flocks along the whole range during summer. For many miles this track follows the contour of the spur's crest, so that every day's march comprises many descents and ascents. As might be inferred from the proximity of the path to the ridge, streams supplying a sufficiency of water for our camp were few and far between, often necessitating long marches to obtain our two chief desiderata—a space large enough to contain our tents and water for cooking. At the end of the first day we found such a place at Ewanangi, a halting-stage for shepherds. Its elevation by B. P. thermometer was 11,174 feet. The camping-ground was covered with young plants of the formidable *Cnicus eriophoroides*, a large Thistle. At the commencement of this march we struck the Islumbo Pass, and continued in a northerly direction. The path runs through woods of *Rhododendron arboreum*, *R. cinnabarinum*, *R. Falconeri*, *R. barbatum* and *R. Hodgsoni*, *Acer caudatum*, *Betula utilis*, *Pieris ovalifolia*, *Juniperus Pseudo-Sabina*, *Abies Webbiana*, *Prunus rufa*, *Arundinaria spathiflora*, etc.

The following day's march was from Ewanangi to Megu. Two *Gentians* become common at about 12,000 feet—one, *Gentiana stylophora*, with large, terminal, greenish, Lily-like flowers; the other, *Swertia Hookeri*, conspicuous by its brown leaves and inflorescence, growing together in whorls on a stem often six feet high. A white and pink *Primula* is common; *Rhododendron Anthopogon* is abundant. Its fragrant leaves are largely collected and burned as incense in Buddhist temples. Small trees are represented by the species of *Rhododendron* formerly enumerated, *Pyrus foliolosa*, *Prunus rufa* and the bushy variety of *Juniperus recurva*, which forms excessively close thickets. *Spiræa bella* and *Pyrus rhamnoides* grow in open situations. *Clematis montana*, with large white flowers, climbs over bushes, and at once arrests attention. A succession of steep ascents and descents (where we first saw plants of *Meconopsis simplicifolia* in flower nestling under *Berberis*-bushes) was covered by a comparatively level path running over the rocks of glacial deposit, at the end of which lay the large and grassy flat of Megu, whose elevation by B. P. thermometer was 12,767 feet. Its bright green surface was interspersed with many plants of white Primroses and yellow *Calathodes*, a refreshing sight after traveling through such a long waste of *Rhododendrons*.

Attaining a ridge marked by a rudely built monument, bearing a small flag, we descended a steep gorge, down which a stream urged its turbulent course. The most noteworthy plant growing in the desolate locality we had traversed is the gigantic *Rhubarb*, *Rheum nobile*, always associated in the traveler's mind with barren precipices, where they delight to grow, and where they heighten the weird effect of such scenery by their cadaverous stave-like stems, for only by closer inspection can the actual beauty of the plant be realized. The only perfect specimens existed on inaccessible rocks, as the shepherds collect and devour all they find within reach.

Leaving Gambothan, which is 12,400 feet above sea-level, a steep ascent was made to the summit of the ridge—13,300 feet in elevation. For half the distance there is a scattered forest of *Abies Webbiana*, *Juniperus recurva*, *Rhododendron campanulatum*, *Prunus rufa* and *Betula utilis*; the upper part being almost wholly occupied by *Rhododendron Anthopogon* and *R. setosum*. These, when bruised or trodden upon, exhale a strong perfume from the superficial glands with

which they are covered, aggravating the headaches to which all are subject at high elevations. *Gentiana stylophora* is exceedingly common. Beyond the ridge is the broad, open summit of Bokto, covered with grass, on which two large flocks of sheep were feeding. From this a descent has to be made into the valley of the Yangsap through dense growths of *Rhododendrons*, *Abies Webbiana*, *Pyrus foliolosa* and *P. microphylla*; beyond is a steep hill, almost devoid of vegetation and covered with boulders. The path winds up its right flank to a depression below its summit at about 14,000 feet elevation. There is a good wood of *Juniperus Pseudo-Sabina*, and the shrubby vegetation mainly consists of a *Berberis* not yet in leaf. Descending somewhat we crossed two small plains with a steep low ridge intervening. On these level tracts, intersected with sheep-walks, it would have been almost impossible to keep the proper paths had not the shepherds marked them with upright slabs of stones at regular distances. Leaving the second plain, a steep scramble along the inclined foot of an enormous black gneiss cliff brought us to the bank of Ratong River, on whose further side we camped on a flat grassy knoll, the only cleared spot in a waste of *Rhododendrons*.

In a second tour, Mr. Gammie visited the Lachung valley, where, at the head of the valley, 8,000 feet above the sea, he tells us:

This locality is eminently distinguished by its variety of coniferous trees. *Abies Webbiana*, the dominant species on the humid mountains of the Singalelah and Chola ranges, even here maintains its supremacy in numbers. It ranges from 9,000 to 13,000 feet. Up to 11,000 feet it grows intermingled with the other lighter-foliaged Pines, but from that elevation to its highest limit it exists alone or associates with the equally dark-colored *Juniperus Pseudo-Sabina*, so that nothing breaks the monotony of their sombre aspect on the slopes which they clothe with their lofty forest. *Juniperus Pseudo-Sabina* and *J. recurva* are the two last representatives of arboreal vegetation, both attaining 15,000 feet, the former as a small stunted, weather-worn tree, the latter as a prostrate intricately branched shrub.

Picea Morinda and *Tsuga Brunoniana* are found between 8,000 and 11,000 feet. The first is a tall, conical tree, with a thick trunk and dark green pendulous branches, the latter has spreading branches, drooping at the extremities, and bears very small cones. *Larix Griffithii*, the only Himalayan Larch, is restricted in its distribution to eastern Nepal, Sikkim and Bhutan, and previous to its rediscovery by Dr. Hooker its existence was only known from a notice in Griffith's journals. It is pyramidal in outline and attains a height of sixty feet. The branches are long and pendulous, supporting erect cylindrical cones, closely resembling those of *Picea Morinda*.

The Peach and Apricot, introduced from Thibet, are cultivated by the villagers at Lachung, but in no great quantity. I was informed that the fruits of both ripen in the end of September. *Pyrus Sikkimensis*, a wild Crab-apple tree, is common, but its austere fruit is only pleasantly edible when stewed with sugar. A little barley is reared, with radishes and turnips, which were the only vegetables I could obtain worth eating; their scanty yield of potatoes consisted of wretchedly small tubers, so waxy as to be nauseating when cooked.

Bulletin 35 of the West Virginia Agricultural Experiment Station is devoted to wood-boring insects and the defects in timber caused by them. Some of these insects infest dead trees only, others attack unhealthy standing trees, others still prefer the healthy wood of living trees. Some of them inhabit the sap-wood only, while others enter the heart-wood and make tunnels which may extend for several feet through the best part of the trunk. The so-called pin-holes in the heart-wood of Chestnut, for example, are made by an odd-looking worm which never infests a living tree unless some wound in the bark or wood is made where the parent beetle deposits her eggs. A broken branch or bruise in the bark will be sufficient to give them a start, and, according to Professor Hopkins, who writes this bulletin, a wound made by a small bullet in a thrifty young tree was sufficient to attract beetles, and although the wound was made some ten years ago it is still infested by the worms, which proves that the same wound may be utilized for years by successive generations. A wound to the bark of a young tree five or six inches in diameter from a load of shot has been known to start so many worms at work in the wood at that point as to kill the tree. Pin-holes in Oak, ranging from one one-hundredth to one-eighth of an inch in diameter are drilled by a similar worm, which also only attacks living trees where there has been some serious injury to the bark and sap-wood. Other pin-holes occur only in the sap-

wood. One variety known as the sap-wood timber-worm comes from eggs deposited in the crevices of the bark of the Yellow Poplar or Tulip-tree, Basswood, Buckeye, Chestnut and Black Walnut, and where logs are allowed to lie with bark on them has caused a loss of from five to ten per cent. of what would otherwise be good lumber—that is, every thousand feet of injured sap-wood means a loss of from fifteen to twenty dollars. Most of the insects which cause defects in the sap-wood of logs and dying trees attack only those with the bark on, and the proper method of prevention is to strip the bark from logs and felled trees which are cut between October 1st and April 1st, when they are to lie more than one month after the later date before they can be converted into lumber, and from all logs cut between April 1st and October 1st, unless they can be converted into lumber directly after the trees are felled. These dates are given because the eggs are laid during the months of April, May, June and July. Larger tunnels, known as worm-holes, are caused by the so-called carpenter-worms, the pine-sawyer and other grubs, and any worm-hole or pin-hole may become enlarged by decay or by the work of ants and other insects, so that the value of otherwise clear lumber is depreciated, causing great loss to producers and dealers. Besides this, premature decay results from the moisture and fungous germs which find lodgment in the wood of trees and in manufactured timber products through these entrances made by insects, and thus causes loss to both producers and consumers. The amount of this loss varies in different kinds of timber and in different localities from five per cent. to fifty per cent. of the total output, and sometimes is sufficient to reduce the receipts of an investment below the cost of production. Professor Hopkins gives an account of the precautions which should be used in managing standing and felled timber against these insects, the methods of preventing their attacks and the methods of destroying the insects themselves; and since insects which do this damage have not all been carefully studied and it is a difficult matter to become familiar with their life-histories, it becomes important that the appearance of any new pest of a threatening character should be reported as soon as possible to a competent entomologist, so that the proper remedy may be at once applied. This bulletin will be of great value to all persons who deal in wood products, and will interest every intelligent reader.

Notes.

Mr. Frank Lamson-Scribner, Director of the Tennessee Agricultural Experiment Station, has been commissioned by the Department of Agriculture to collect and impart useful information regarding our Grasses.

At this season, wherever any planting is done for beauty or for use, a little ground should be set apart for the children in every home. The possession and cultivation of a miniature garden will do much to cultivate habits of observation, turn the attention to the mysteries and beauties of plant-life and develop a taste which will be a fruitful source of pleasure in after life.

Mr. S. D. Willard considers unleached wood-ashes the best fertilizer for the Plum-orchard, but when that cannot be obtained he uses some potash salt, usually the muriate of potash, with a guaranteed analysis of sixty-seven per cent. Bone-meal is applied to furnish phosphoric acid. The abundant use of barn-yard manure produces a rank growth which is too easily winter-killed.

Where the kerosene emulsion is needed only in small quantities the methods recommended, which are usually for large supplies, are cumbersome. A correspondent of the *Farm Journal* gives the following plan: Put in a demijohn, jug or large bottle two ounces of any hard soap, shaved fine, then pour in a quart of hot water to dissolve it, and while hot add half a pint of kerosene. Shake the bottle violently until a milky fluid is formed, with no free oil visible. Before using this dilute it with twice its bulk of warm water.

Any one who desires to identify the birds found in the northern states east of the Rocky Mountains will find substantial aid in the little Pocket Key compiled and published by Professor A. C. Appar, of Trenton, New Jersey. The few technical terms used in the book are defined in a brief vocabulary, but it is written throughout in the plainest language, and the most conspicuous external parts of the bird are used to help in the determination. The book follows the same admirable plan which Professor Appar has used in his key of the trees and shrubs of this region.

To illustrate the possibilities of improvement by selection, Mr. Brill, of Hempstead, Long Island, in an address before a farmers' institute, stated that one of his neighbors began ten years ago to secure a strain of Asparagus by selecting white shoots with the purpose of establishing a fixed variety which would produce nothing but white asparagus. Fully ninety per cent. of his plants now come true, and for every bunch sold he receives a substantial advance over the market price, and every pound of seed which he saves is worth three times as much as ordinary Asparagus-seed.

Mr. R. T. Titus, of Westbury, Long Island, who exhibited thirty-four varieties of potatoes at the Wold's Fair, tested one hundred varieties last year, and found the most productive to be Rural New Yorker No. 2, which yields a tuber of fine shape with few small ones in the hill. Rural Blush, a very large late potato, but liable to rot, followed next in amount of yield; American Wonder is recorded as of the best quality and free from disease; Michigan Rose is called the favorite in the New York markets, and good in every particular, while King of the Roses is noted as early, a good cropper and strong grower and of excellent quality.

In a trial of twenty-five different varieties of Blackberries at the New York Experiment Station last year the old Dorchester, which was introduced forty years ago, yielded the greatest amount of fruit, of medium size, good color, sweet, juicy and of good flavor and quality. Ancient Briton was next in productiveness, followed in order by Early Harvest, Agawam and Kittatinny. Of the Black Caps, Mills No. 7 was the most productive variety, followed by Mills No. 15, which was the most productive of all the late-fruited varieties. Carman is noted as a desirable early sort. Of the Red Raspberries, Pomona was the most satisfactory early variety, and it also gave good pickings later in the season. Royal Church and Cuthbert are pronounced the best for late picking.

The sudden and severe cold which followed the warm weather of early March has not probably done serious damage to the fruit in this latitude, but farther south it has been a serious disaster. In this city the effect was immediately felt in the increased price of such early vegetables as were coming from Savannah, Charleston and North Carolina. Professor Massey writes that in Raleigh everything had advanced to exuberant growth. Peaches and plums were well set, and Apples were in full bloom, while in the gardens the peas were set in the pods, and Beans, Melons, Tomatoes and Corn were growing in the open ground. On Easter Monday the roofs showed a hoar-frost as white as snow; the next day the mercury stood at twenty-two and a keen wind was blowing. Peas, Cabbage, Radishes, Lettuce, Potatoes and everything in the garden were blackened and killed. It seems hardly possible that any Peaches or Plums will escape, and Grapes will probably make no crop. Everything was in full sappy growth and everything has suffered, so that the loss throughout the south is enormous.

One of the most serious enemies with which the fruit-growers in California have had to contend against is the San Jose scale, *Aspidiotus perniciosus*. Last year it was first discovered in the eastern states near Charlottesville, Virginia, and the Board of Agriculture of that state and the United States Department of Agriculture have just completed a series of fumigating operations which it is hoped has destroyed it in that locality. It has recently been discovered, however, at De Funiak Springs, Florida, and in Charles County, Maryland, where an orchard of three hundred Peach-trees and Apple-trees is severely injured. It has probably been brought eastward upon nursery-stock imported from California, and if this is true, similar diseased stock has probably been brought to other parts of the east. It is important that fruit-growers should make an immediate examination of their orchards to ascertain whether or no this insect has made its appearance, for if it is allowed to spread the evil will be a serious one. The insect is a small, flat, round scale, rather lighter in color than the bark of a tree, and is most abundant on young limbs and twigs. At this season it is about one-eighth of an inch in diameter, and there is in the middle of each scale a small elevated, blackish, rounded point. The wood underneath it is apt to be discolored. Where the insects are abundant the bark is completely hidden, and the scales are then hardly distinguishable by the naked eye. Fruit-growers discovering this scale should at once notify the Department at Washington and send specimens. An emergency bulletin is being prepared which will give a full account of the insect, together with the best means to be used against it, and it will be sent to all applicants as soon as it is published.

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The Spring Garden.

THIS is the season for the appearance in the newspapers of the annual pleasantries about spring poetry and spring poets; but, although the jest has grown stale and flavorless by repetition, it is the outgrowth of a substantial truth. If the love of nature exists in any one, even as a feeble sentiment, it is always stirred by the miracle of renewed life which is seen in the swelling buds and in the sender green of the springing grass. No flowers make so strong an appeal to the imagination as those of early spring. After the long trance of winter they bring with them the freshness of a new creation and the promise of abundant life. Only a plant with a sturdy spirit could brave the wild weather of a northern March, and yet some of our earliest flowers have a fragile grace which elicits our warmest sympathy as they open trustfully above the frozen earth. Nor do they lack a beauty which would compel admiration at other seasons when the field is full of rivals. In all the floral wealth of summer and autumn there is nothing to excel in delicate beauty the "vestal white and vernal green" of the Snowdrop; there is no blue more pure than that of the Siberian Squill or the Alpine Anemone, while the Tulip rivals in the splendor of its color the most gorgeous flowers of the tropics. We make no apology, therefore, for again urging every one to have a spring garden, for, if one has a garden at all, spring is the season when it can be made to yield the greatest delight. This advice can be given with special emphasis to that large class who leave their homes in summer, and can only enjoy their gardens in April and May and June. Perhaps it should be added that a spring garden can be cared for with less trouble than other gardens, since all the plants which flower now prepare to bloom the year before, and many of them will live on and multiply for successive years without renewal. This last consideration, however, amounts to little, for no one deserves a garden at any season who is not willing to give it all the attention it needs.

We have spoken of the spring garden as if the phrase presented a single definite picture to the mind's eye. But such gardens need not be confined to any one type and

may be of infinite variety in structure and material. All the temperate countries of the world and the lofty mountains of warmer latitudes have been ransacked by collectors for hardy plants, so that it is more difficult to decide which ones to reject than which ones to choose. In one of the early volumes of GARDEN AND FOREST (see vol. ii, p. 277), a garden was described which consisted essentially of a moderate-sized lawn sloping toward the south and east, and of a somewhat circular outline, in the midst of which stood two noble Hemlocks, whose branches swept the sod. The lawn was surrounded with an irregular shrub border, which was backed by larger trees. Spring-flowering shrubs, like the Spiræas, Exochordas and Forsythias, were backed by taller ones, like the Dwarf Apples and Lilacs, with isolated masses of Daphnes, Andromedas, Azaleas and other dwarf-flowering shrubs to the front of these, while the spaces between these masses were planted with hardy bulbous and perennial plants which bloom in the early spring. This idea of a lawn bordered with flowering shrubs could be modified and multiplied to any extent, and few better situations for such plants as Daffodils and Squills, Iceland Poppies and Columbines, Lady's Slipper, Blood Root and Trillium, in short, for all early-blossoming plants, except those which have been developed by long cultivation into stiffness and formality, like the double Hyacinths, for example. Of course, the arrangement should always be simple and quiet, and its expression would be marred by any glare of color like that produced by large masses of garden Tulips.

This sheltered and flower-fringed lawn, however, is only one type of a spring garden. Many of these early flowers adapt themselves even to formal designs. Many more are well placed against house-foundations or under the lee of walls and fences, where they not only appear to excellent advantage, but where they receive some shelter from the winds and catch the first increasing warmth of the sun. Many others never appear more beautiful or happy than in the crevices or pockets of a well-constructed rock-garden. There are species and varieties for every situation, and so numerous are they that a mere catalogue of their names would cover many pages. We could have a succession of Irises from early March until the Spanish and English Irises burst into bloom. Before the Crocuses are gone the Daffodils will begin to open, and will continue for at least six weeks. Chionodoxas and Grape Hyacinths, Snowflakes and Fritillaries, Ornithogalums, Alliums, Dog-tooth Violets, Lilies-of-the-valley and the Tulip species are among the bulbous plants which have well-known representatives in almost every garden now, yet nearly every genus has newer and rarer forms enough to furnish study and delight year after year to the enthusiastic specialist. Besides these bulbous plants there are a thousand herbaceous ones, many of them natives of our own country, whose very names, if we had space for them, are full of music and spring poetry.

These spring flowers never tire us, be they ever so abundant. Fortunately, therefore, some of them can break over the boundaries of any orderly garden and give us increased delight as they run wild through the grass. Crocuses are never more at home than on a lawn, and they are done blooming before the grass is long enough to hide them. Chionodoxas and Grape Hyacinths multiply like weeds. Lilies-of-the-valley are never more attractive than they are along a woodland walk. The wild Hyacinth, *Scylla campanulata*, and the Poet's Narcissus will thrive in the tall grass and give an added beauty to any meadow-scene. Any of these can be used to brighten up out-of-the-way corners, and they never serve a better purpose than when they surprise the visitor in the more remote and rougher parts of gardens and large grounds. The illustration on page 145 shows a mass of Poet's Narcissus along a shady walk on the grounds of Mr. John L. Gardiner, in Brookline, Massachusetts, as seen from one of the windows of his house. Perhaps it should be added that the spring garden alluded to above is a part of the same grounds, but, in spite of the wealth of early flowers which it contains, no one would complain that the

outside masses of *Narcissus* like those shown in the picture, or the same plants growing elsewhere in the grass, are wearisome by their sameness. Certainly the naturalization of these *Narcissi* and other hardy bulbous plants in meadow grass is one form of spring gardening which should not be neglected by any one who wishes to obtain all the pleasure possible from early flowers. Of course, to have them at their best, the soil must be deep and rich and the grass must not be cut until the leaves of the plants show, by beginning to turn brown, that they have finished their work and that their bulbs have stored up material to produce flowers the following spring.

March in the Pines.

A FEW of the more tender plants made a rapid growth in the Pines during the warm days of early March. *Helonias bullata* sent up its flower-scape with apparent haste wherever the warm sun could reach it, but amid the dense Cedars it has made but little progress, and therefore the severe frost which suddenly followed three weeks of constant April or May weather did it no harm. The Golden-club, *Orontium aquaticum*, also made a start, but it was cut down wherever it appeared above the water. *Pyxidanthra* and the trailing *Arbutus* are both sturdy enough to defy freezing weather, and the flowers of *Andromeda calyculata* look as fresh and bright as if the thermometer had not dropped below the frost-mark.

The staminate flowers of the Alder and Filbert had done their work in the warm days and had generally fallen, and the fruit was forming when the cold came. The fruit of the Maple, too, had formed on many of the trees. The Elms also were shedding their blossoms, and the long staminate flowers of the Poplars were strewn thickly over the ground. Some of the Tupelos were showing their blossoms, and so was the Sweet Gum, or Liquidamber. The twigs of the red-bud *Cercis Canadensis* were studded with bright blossoms which stood the frost bravely.

All through March some of the low Sedges were full of bloom, and its wealth of bright yellow pollen made a feast for swarms of small bees. These bees, together with our hive bees, also collected pollen from the blossoms of the Willows during the warm weather and gathered honey from many of the garden-flowers.

The hardy Winter Cress, *Barbarea*, blossomed throughout the month, showing a profusion of yellow flowers on stems from two to three feet in height. It is only a few years since I first noticed the advent of this hardy cosmopolitan in our neighborhood, and now it is quite common in many places. It is interesting to keep in view the various foreign plants that are constantly invading our grounds, and to note the disappearance of so many of our native ones. It is only a little more than thirty years since the first clearing was made here in the virgin Pines, where now the large Vineland tract extends over many miles of cultivated ground.

In spite of former experience, one cannot help a feeling of surprise at the intensity of the cold which the hardy spring flowers of the garden will endure. Three mornings in succession Hyacinths were frozen solid, and their great bunches of flowers lay prone on the ground, but before night they had so far recovered as to carry themselves erect and defiant. Several forms of the yellow *Narcissus* also recovered without permanent injury, as well as many of the smaller plants, like Grape Hyacinths, *Chionodoxa*, *Periwinkle*, both white and blue, and purple Violets.

The tender-looking stem of the Crown Imperial stood about eighteen inches in height, with its whorls of buds just ready to expand. The leaves and buds were limp each frosty morning, but to-day it stands erect and fresh, and will soon be in bloom.

Some of the Plum-trees were in full bloom, and the blossoms of Abundance and Botan were hopelessly ruined for this year in my garden. But some of the other Japan Plums, Ogon, Kelsey and Satsuma, were not yet in flower.

Some of the Peach-trees were also in bloom, as well as Apricot and Almond trees.

The beautiful Japanese climber, *Akebia quinata*, was badly injured. The flowers were nearly ready to open, and they now hang limp and black all over the vine. The tender leaves, too, are blackened.

Vineland, N. J.

Mary Treat.

The Linnæa: An International Botanic Garden in the Alps of Switzerland.

IN the spring of 1889, the Committee of the Society for the Protection of Wild Plants in Europe purchased some land in the high Alps of the Canton Valais, Switzerland, with the view of making it, so far as possible, a botanic garden which should represent alpine species from all parts of the world. This land is close to the village of Bourg-St. Pierre, and near to the Hospice du Grand St. Bernard, in the heart of the Pennine Alps, at an elevation of 1,690 metres. It is easily accessible by a five hours' carriage drive from the station of Martigny, and two hours from the Hospice du Grand St. Bernard. A good hotel is to be found at Bourg-St. Pierre.

The land comprising the garden consists of a mountainous cone, one hectare in extent and about seventy metres higher than the adjacent country. This cone forms a natural and picturesque "Alpe," surrounded on three sides by the roads leading to the Hospice, and on the fourth by a dark precipice of more than one hundred metres depth, through which rushes the picturesque and impetuous torrent of Valsoray, with a beautiful cascade sending its mist to the summit of the cone. The garden is very uneven, strewn with rocks, dotted here and there with Larches, and contains in one portion a grove of these trees. It is composed of a dozen upland plateaus forming natural terraces. At the top of the "Linnæa" stood, in feudal times, a fortress belonging to an old Italian family. No trace of this castle remains at present.

The society which owns this beautiful natural garden embraces among its members some well-known scientists and literary men of Europe, among them Sir John Lubbock, Professor Romanes, of Oxford, and Monsieur H. de Vilmorin. The name "Linnæa" was given in honor, not only of Linné, but also of the Linnæan Society of London, and the pretty little *Linnæa borealis* which grows wild near by. The mountain cone is well exposed to the sun upon all sides, thus favoring a great variety of alpine plants, some of which find a natural home in the shaded and moist nooks in which the garden abounds.

Each of the natural uplands is devoted to a particular flora, of which those of the Pyrenees and the Caucasus are of especial interest. A complete set of Pyrenees alpine plants is represented. Among these the Androsaceæ and the Saxifragæ are the most beautiful. From the Caucasus was received three years ago quite a collection of seeds, brought by Messieurs Levier and Sommier, of Florence. Some of these were obtained from plants which were not in flower, whose identity, therefore, could not be ascertained at the time. Two of them, *Androsace Caucasica*, L. & S., and *Scabiosa Correvoniana*, L. & S., proved to be new.

One plateau is devoted to Siberian plants, another to Himalayan, one to Rocky Mountain species, another to Andean, while one is for New Zealand plants, and so on. A short time ago the director started a plot of alpine species with albino flowers, which are now doing well.

Those having the garden in charge hope to found there an "Ecole de Botanique" on a large upland, on which will be planted and scientifically arranged all the mountainous plants of the world, as far as possible! It is proposed to make a careful study and comparison of the origin and growth of alpine species and the relations which exist between them, the behavior of insects toward them, the variation and acclimatization of species, together with other important problems. As every one knows, it is a difficult matter to study these questions at high altitudes and in the

wild nature of the Alps. In the "Linnæa" almost unparalleled opportunity will exist for such work.

The director extends a cordial invitation to all Americans traveling abroad to visit the garden. He desires also to receive seeds of alpine plants from all parts of North America. It is to be hoped that the responses to this request will be many and prompt. Such seeds may be sent to the director of the garden. H. Correvon, 2 Plainpalais, Geneva, Switzerland.

Washington, D. C.

G. H. Hicks.

Foreign Correspondence.

London Letter.

JAPANESE TREES AND SHRUBS formed the subject of a lecture by Mr. J. H. Veitch at the last meeting of the Royal Horticultural Society. A large number of Fellows attended, and Mr. Veitch's discourse, illustrated by means of numerous dried specimens and living plants, was full of interest. He expressed his indebtedness to Professor Sargent, who was his traveling companion in Japan during a portion of his stay there, and whose knowledge of the flora was of great advantage to him. The matter of the discourse was, in the main, similar to that of the series of articles on Japanese plants, recently published in GARDEN AND FOREST. Mr. Veitch collected plants and seeds of many plants which he believes will be accepted as good garden-plants in England when their merits become known. The number of first-rate ornamental trees and shrubs that we owe to Japan is already very considerable, and fresh additions are being made every year, some of them being, of course, only re-introduced, but others are quite new to cultivation.

PRUNUS PISSARDI is beautiful at Kew now (the middle of March), and it bids fair to become at least as popular as the Almond and double Peach, which are also wreathed in flower with us at this time. The Prunus was first recommended as a garden-tree chiefly, I believe, on account of the coppery-red color of its foliage, a character which gives it considerable value when used judiciously. But this character is eclipsed by the flower-beauty of the trees in spring, when the branches are heavily laden with medium-sized pale pink flowers, among which the unfolding brown-red leaves have a most harmonious effect. English nurserymen, seeing that it is sure to be in great demand, are propagating it largely. It owes its garden-name to the fact of its having been introduced into France about fifteen years ago by Monsieur Pissard, gardener to the Shah of Persia, where it is a native. Its proper botanical name is *P. cerasifera*, var. *atropurpurea*. Its fruits are red, an inch in diameter and edible.

ALMOND-TREES IN STREET-GARDENS.—In the neighborhood of Kew, Almond-trees are a conspicuous feature, occurring in almost every villa-garden, so that the roads are all aglow at this time of year with the beautiful flowers of this fine tree. The extraordinary number of Almond-trees here, is, no doubt, due to an accident, probably some nurseryman, with a big stock of them, having supplied the trees for the gardens when they were first planted some fifteen or twenty years ago. He was a public benefactor, anyhow, whether by accident or design, the Almond-trees giving the locality a delightful character, almost, if not quite, unique. I refer to it here because it teaches a useful lesson, namely, that effective trees which prove themselves suited to a locality should be planted abundantly in preference to that endless variety which often confuses and rarely is effective. Kew might be called Almond Grove at this time of year.

COLUMELLIA OBLONGA is an interesting and pretty little shrub which is grown in a cool greenhouse at Kew, where it is now in flower. According to Sir Joseph Hooker, it is common at high elevations (13,000 feet) above Quito, where it forms a small tree, with whitish branchlets covered with opposite, tongue-shaped, crenately toothed leaves about an inch long, and terminated by compact clusters of yellow, fleshy, Primrose-like flowers three-quarters of an

inch across. At Kew the plants are small, barely a foot high, yet they are flowering freely. This and another species, also Andean, constitute the natural order Columelliaceæ, which is now placed between Pinguicula and Gesneriaceæ, but which is so anomalous that Don gave the Jasmines as its nearest affinity, Lindley Vacciniæ, and Hooker Loganiaceæ. The corolla is formed of a short broad tube and five orbicular spreading lobes; there are two large short stamens and a short two-lobed style.

DIGITALIS CANARIENSIS is the garden name for a plant now rarely seen, but which was cultivated in England nearly two hundred years ago, and was figured by Lindley in the first volume of his *Botanical Register*, t. 48. I would advise any one who wants to make the acquaintance of a striking and beautiful flowering shrub to turn to Lindley's picture of it, and then to write to some one in the Canary Islands for plants or seeds. It is cultivated at Kew, and I saw a plant of it last year in the Glasnevin Botanic Garden. It forms an upright shrub ultimately about six feet high, with stout woody branches bearing only a few leaves at the ends, and these are from six inches to a foot long, linear lanceolate and fleshy. The flowers are borne in crowded terminal erect spikes a foot long, each flower being tubular, an inch long, fleshy, and colored bright orange-yellow. It requires protection from frost. The proper name for this plant now is *Isoplexis Canariensis*.

TULIPA KAUFMANNII is a rare and beautiful species, of which flowers were exhibited at a recent meeting of the Royal Horticultural Society by Mr. Lynch, curator of the Cambridge Botanic Garden, where this plant has been exceptionally effective in the open border in the early part of March. It has flowers as large as a large form of *T. Gesneriana*, measuring, when wide open, seven inches in diameter; its color is creamy yellow, changing to white after it has been open three or four days. The unopened buds are prettily marked with a broad central line of red and bluish feathering on the back of the petals. It is a distinct and evidently free-growing species. I observe the Dutch bulb-growers offer bulbs of it. For its introduction we are indebted to Dr. A. Regel, who found it in Turkestan in 1877. Mr. Baker says it is as variable in color as *T. Gesneriana*, ranging through various shades of red and yellow to white.

FRITILLARIA AUREA is a pretty little species which may be grown in pots for the conservatory in spring or planted out in the open border. It is allied to *F. latifolia* and *F. aurea*; indeed, it was at first considered identical with the latter by Mr. Baker. It has been in cultivation since 1876, when it was introduced from Cilicia. It has lately been sent again in quantity by Mr. E. Whittall from Smyrna, and the flowers of these Smyrnian plants are nearly as large again as those from the Taurus, as described by Mr. Baker and figured in *The Garden* two years ago. There are a few pots of Mr. Whittall's plants in the alpine-house at Kew, five-inch pots containing half a dozen bulbs. From each of the bulbs springs an erect stem six inches high, clothed with narrow lanceolate, glaucous-green leaves two or three inches long, and bearing a cernuous flower which is campanulate, one and a half inches across the mouth; the segments oblong obtuse, nearly an inch long, and the color bright canary-yellow, copiously freckled with small brown-purple dots.

TWO NEW ORCHIDS.—Messrs. F. Sander & Co. have recently introduced from New Guinea a new *Grammatophyllum* and a *Dendrobium*, plants of which were offered at an auction sale a few weeks ago. They are described by Professor Kranzlin in the *Gartenflora* for March 1st as follows: *Grammatophyllum Guilelmi* II.: habit of *G. Fenzlianum*, but larger, with massive stems and leaves two feet long by four inches in width. Raceme about three feet long, bearing from twenty to thirty-five handsome flowers each over three inches in diameter and colored purplish-brown margined with greenish-yellow, the lip white with purple stripes. *Dendrobium Augustæ Victoriæ*: a large-growing species in the way of *D. Mirbelianum*, bearing, at the apex

of stout pseudo-bulbs, racemes a foot and a half long, clothed with numerous handsome flowers, each over an inch in diameter; sepals white, petals pale yellow, with purplish markings and the lips rose-purple. The descriptions look promising, but we cannot compliment Herr Kranzlin on the choice of specific names, which are too cumbersome.

An experimental fruit-farm is about to be formed near Woburn, in Bedfordshire, by the Duke of Bedford, who takes a special interest in all questions affecting the fruit supply of this country. It is in contemplation to form at first a model orchard, in order to investigate, both scientifically and practically, the culture of hardy fruits. About twenty acres of land in the neighborhood of Woburn Abbey have been set apart for the purpose, and are to be placed under the superintendence of Mr. Iggulden, a good horticulturist, who has been for many years gardener to the Earl of Cork and Orrery at Marston House, Frome, Somerset, and who is well known as an able writer on practical fruit-culture and other horticultural matters. The Duke of Bedford is setting an example which county councils here might well follow: To teach the uninitiated what to grow and how to grow it. A few model orchards or gardens, such as is here proposed, would be infinitely more successful than lectures in school-rooms with blackboard illustrations. Gardening requires to be seen in operation and assisted at before it can be understood.

London.

W. Watson.

Cultural Department.

Early-flowering Magnolias.

FEW shrubs or small trees attract so much attention when in blossom as do the early-flowering Magnolias, the flower-buds of which open before the leaves expand. These flower-buds are fully formed during the previous summer, are large and conspicuous during the winter and are densely covered with thick strong hairs or pubescence; while the later-flowering species have much smaller buds and the hairy covering often appears much less developed, or it may be entirely wanting. All of the early-flowering Magnolias known in our gardens have been received from Japan or China, the Magnolias native to our eastern North America all belonging to the class which flowers after the leaves have expanded, as do also a number of species indigenous in eastern Asia.

There are only four recognized species of the early-flowering group in cultivation, but from these there have been produced a number of hybrids or varieties which have received latinized names. *Magnolia conspicua* and *M. obovata* are the best known of the four species, and forms derived from these are most common in gardens.

Magnolia conspicua, or *M. Yulan*, as it is sometimes called, is a most beautiful species when covered with its large lily-like pure white blossoms. It is perfectly hardy in Massachusetts, and in Boston and vicinity it is usually in full bloom about the first week of May, but varying according to the season and location. In 1888 a few of its flowers were open on May 8th; in 1889 on April 23d; it was in full bloom May 1st, 1890; the same plant was equally advanced April 25th, 1891, and on May 2d, 1892. Trees of this species are uncommon about Boston. A specimen on Beacon Street, although not large, always attracts much attention when in full flower, and in the shelter of the city buildings it may blossom a little earlier than the dates given. In this climate *Magnolia conspicua* may become a symmetrical little tree twenty-five feet or more in height. The plants purchased from nurserymen are almost invariably grafted, and they will begin to blossom when three or four feet high, and the bloom will increase with the age of the plant.

Magnolia obovata is a species closely allied to and used to hybridize with *M. conspicua*, but the aboriginal form is a very rare plant in our gardens, and is not considered very hardy. It is hardly more than a large shrub, having large flowers, which are of a deep purple color on the outside and creamy-white within. In cultivation it is best represented by the plant known as *M. Lenné*, which resembles it very closely in many respects and which is supposed to be a hybrid between *M. obovata* and *M. conspicua*. *M. Lenné* is quite hardy in this climate and becomes a large broadly spreading bush. It does not always flower so profusely as *M. conspicua* or as some of the other hybrids which are better known. Of these latter

M. Soulangeana is probably the most familiar in American gardens. It has much the same habit of growth as *M. conspicua*, but has somewhat smaller white flowers, and these are tinted or streaked with purple on the outside, especially near the base. Besides this, there are several other very similar forms with purple-tinted flowers, which have received specific names from nurserymen, and which are often not to be distinguished from *M. Soulangeana* in general aspect. Where only one plant of this type can be afforded, *M. Soulangeana* should be selected. The others may be added if all slight variations are desired. These pass under the names of *M. speciosa*, *M. Norbertiana*, *M. superba*, *M. stricta*, *M. Alexandrina*, *M. Candolleana*, etc.

All of these hybrids, being propagated by grafting, begin to flower when quite young, and the blossoms open some days later than those of *M. conspicua*.

These Magnolias have a strong and peculiar odor, not really disagreeable, yet not wholly agreeable, to most persons. In another early-flowering species, however, the flowers have a sweet fragrance which most people like. This is *Magnolia stellata*, sometimes called *M. Halleana*, which, although usually seen as a low and spreading shrub, may attain to a height of ten feet or more. It is still rare in American gardens, but is fast becoming better known. Its flowers are pure white, about three inches in diameter, and they appear earlier than those of any other species if planted in a warm situation. It is a most attractive plant when in full bloom, and it possesses the merit of beginning to bear a few flowers when only a foot or two high. It will grow in any good soil, and may be planted with good effect in a well-made rockery.

The fourth species of early-flowering Magnolia in cultivation is *M. Kobus*, known also as *M. Thunbergii*. It promises to become a good-sized tree, and as yet it has shown little inclination to flower freely. Its blossoms are pure white and quite fragrant, and if the tree blooms freely when of mature age it must prove very handsome. It is perfectly hardy in this climate, and, although still very rare, it is likely to soon find places in many gardens.

Most of the early-flowering Magnolias sold by nurserymen are grafted plants, and in this country they are usually grafted on the Umbrella-tree, *M. tripetala*, or upon stock of the Cucumber-tree, *M. acuminata*, and the latter is generally to be preferred. They will thrive in any good soil, provided it is well drained, but not too dry. A peaty soil seems particularly suited to them. They should be transplanted in spring, and it is safest not to do this too early, but to wait until the buds burst. If planted too early the very fleshy roots of all Magnolias which have been cut or bruised are likely to be affected by decay, but if moved when growth has started, healing of the wounded parts begins at once, and there is less danger of injurious effects.

Arnold Arboretum.

J. G. Jack.

Some Points in Pruning Fruit-trees.

I HAVE often observed that when farmers and others who have set out fruit-trees are asked why they have neglected to prune them, the reply is that they do not know rightly how to prune, and they fear, in cutting off branches, that they may do more harm than good. Sometimes this excuse is really one of laziness or indifference, but more commonly it is true. It is a puzzling thing to thin out the head of a neglected fruit-tree, even to a man of experience; and, as a matter of fact, few men, if any, however large their experience, will entirely agree as to what shall be cut and what left.

There is a conservative surgery of the orchard, and skillful work will be justified in its results, when compared with mere cutting and slashing. To begin with the young tree from the nursery, two or three years old, it must first be understood that perfect spacing of limbs at that age is out of the question. The young trees must be allowed to grow awhile before much can be done toward fixing the frame-work of the tree. A young tree of four feet in height does not afford the room, when the proper allowance of bare trunk is made, for final limb-spacing. The top of such a tree is too low to allow for the height of even the lowest limb of the bearing orchard-tree, which should not be lower than five feet. Yet it is right that the lower limbs of the tree should be left to grow until the tree is so well established as to make an annual growth on leading limbs of one to two feet. When the tree is thus well under way we may begin carefully to rub out buds and select the position of limbs, holding always in mind that the ultimate spacing cannot be established for several years, because the required space does not yet exist. This early pruning is provisional, and more or less temporary; but the future tree must be in the mind's eye from the start.

If the soil is in good condition, and the young trees healthy and well rooted, there will always be something to do in rubbing out buds and removing superfluous shoots; but it is best not to do too much in this way at any single inspection. Each tree of a vigorous young orchard should be gone over every week or ten days, only the obviously necessary cutting being done at one time; and it is plain that the visits to each

good point, also, to study each tree while visiting it with a view to future removals of wood. A limb to be soon taken out may, by pinching out its tip, be prevented from further growth; but if such a pinched limb is left more than a week or two, it will push many of its lateral buds, and, therefore, the interval between pinching and removal must not be long.

The trees of a young orchard are subject to injury by high



Fig. 26.—A Garden Walk in Early Spring.—See page 141.

tree should be frequent enough to prevent waste of plant-energy in useless growth. These frequent visits are also essential to prevent damage from successive broods of insects. The risk of severe shock to a young tree by too much cutting at one time, causing arrest of growth, and consequent tendency toward scrubbiness, should be always kept in mind. It is a

winds, and after severe storms the orchard ought to be gone through rapidly by two persons, and such trees straightened up and firmed in the ground by careful treading, such as will not injure the bark. A tamping-stick, somewhat flattened on one side of the lower end, is useful in such work. If a racked tree cannot otherwise be completely straightened up, so as to

stand firmly erect, it should be well staked; for otherwise all the branches may take on a "set," which would require much careful work to remedy.

When a rather slow-growing variety has been worked on a vigorous root there is usually more or less tendency shown on the part of the young tree to send up suckers. All such cases ought to be treated thoroughly, by removing the earth about the tree so as to expose the point of origin of every sucker. Remove each one with a sharp knife, going deeply enough so that there will be no more sprouting from those points; it is well at the same time to notice wherever any little white points are forming upon the stock, indicative of further sprouting, and to devitalize them by a slight cutting. If this is not done thoroughly from the start the evil will rapidly increase, to the great detriment of the orchard. This is in some degree prevented by such deep planting as will allow every young tree to root freely from the cion.

Newport, Vt.

T. H. Hoskins.

The Hardy Flower-garden.

CHIONODOXAS are still in flower, though the earliest blooms are past. *C. Alleni*, in its second year, is proving a gain. It is quite the largest-flowering variety of the family, exceeding even *C. grandiflorum*, than which it also seems more free-flowering. The slaty blue color of *C. Alleni* is not unlike that of *C. grandiflorum*, perhaps a trifle brighter. These *Chionodoxas* have often a tendency to show a large eye at the base of the petals. I grew a pan of *C. Alleni* in a cool-house last year and these all showed this tendency very markedly, the color being refined to a nearly pure white at the base of the petals, while the blue of the upper part of the petal was purer in tone than in those grown in the open. I thought at the time, making allowance for lighter color under glass, that the variety would prove a large white-eyed *C. Sardensis*, but was mistaken. *C. Alleni* has the same dark-colored line down the centre of the petal which distinguishes *C. grandiflorum*. It is evidently the fate of these two varieties to be mingled in gardens. *C. Tmolusi* will probably also join *C. Luciliae*, where effects and not differences are valued. The former variety with me is of more intense blue than *C. Luciliae*, and has a smaller white eye. The petals are also not so much reflexed. Mr. Whittall sent out a "*C. Sardensis* with dark eye" this year. It is a beautiful flower, richly colored and, perhaps, earlier than the type, though this is not certain. I am unable, however, to see any change from the normal type in the eye, which, in both cases, is a mere cluster of white stamens, the petals being entirely dark blue. Red and white forms of *Chionodoxas* continue very rare. We have, thanks to Mr. Whittall, this year, the first red forms of *C. grandiflorum*, but the bulbs are not yet strong. Red or pink forms of *C. Luciliae* are very pretty, but the pure white kinds are the choicest of the family. Still, if one does not care for rare flowers he may well be content with the original *Glory of the Snow*, for *C. Luciliae* is one of the brightest and most distinct of garden-flowers at this season, and well planted will wax strong and increase in numbers and consequent beauty each succeeding year.

There may be a calendar of Daffodil flowering, but it seems to vary much from season to season. This year *Bicolors* and *Henry Irving* were easily first, followed by *Tenby*, *Scoticus*, *Ard Righ*, *Nanus*, *Countess of Annesley*, *Golden Spur*, *Sir Watkin* and *King Umberto*. As the latter is a selection from the first variety, this list is an instance of the folly of trying to make out the rotation of varieties which flower at about the same time. Like all bulbs in the open, their flowering time is modified by circumstances, such as soil, exposure and depth of planting, and either of these may vary but slightly to produce very marked variations.

Elizabeth, N. J.

J. N. Gerard.

Sub-irrigation in Greenhouse and Garden.

JUST at present the new method of watering greenhouse-beds by means of pipes or lines of tile laid on the bottom of water-tight benches, is a much-discussed and interesting subject. While experiments in this line have only just begun, and the solution of most of these irrigation problems is yet a task for the future, we can already see that the innovation for greenhouse operations is one of practical value. As in almost all such cases, however, the first claims of its inventors, or advocates, will need modification. One of my benches has been arranged for subirrigation by means of a five-quarter-inch gas-pipe laid on the ordinary plank bottom in the manner shown in accompanying sketches (see figures on this page). The two parallel pipe lines are two feet apart. Quarter-inch holes are drilled through the pipe four or five inches apart, alternately

on opposite sides. The further end is closed, although not perfectly tight; the other end is turned up and receives the water through a funnel, or directly from the hose. The bench bottom is not absolutely water-tight, being made of ordinary matched two-inch pine-plank. Neither lead, cement, nor paint has been used. This has saved work, time and expense, and the arrangement seems to work well.

I find the following advantages in the new method of water-application: (1) Ease of application; (2) certainty of thoroughness in watering; (3) exemption of plants from disease. Overhead watering in amateur houses, when it has to be done by



Fig. 27.—Plan of Bench arranged for Subirrigation.

means of the ordinary garden-sprinkler, is a tedious task. In the new arrangement we simply pour a few bucketfuls of water into the funnel and the work is not only done, but done well. This method of application also enables us to use washing suds, manure-water and similar liquids which we would not like to put on the plants from overhead, either from considerations of cleanliness or for fear of clogging the sprinkler.

Watering beds with the sprinkler is rarely done thoroughly. A bucketful of water sprinkled on in the usual fashion will make a good-sized bed appear soaked, while, in fact, the application may not have reached beyond an inch deep, leaving the lower portions dust-dry. Such, indeed, is not an uncommon condition of many benches and flats in the glass-houses of amateurs. Subirrigation gives us reversed conditions. On a bench, which one bucketful of water applied by surface-sprinkling would render apparently quite wet, you may turn two or three bucketfuls through underground pipes, without bringing moisture enough for a respectable show to the surface. The consequence is that almost every one, without exception, would apply a greater quantity of water by subirrigation than by the old overhead sprinkling method. Herein, I believe, is the chief and, perhaps, the only reason for the greatly increased growth of certain crops observed at the Ohio Station, as the result of subirrigation. It is only an experience similar to the one made in the application of fertilizing substances on Potatoes and other crops. Quantity of application is the deciding factor rather than the mode of application. Lettuce and Onions are especially subject to this influence. On an ordinary bench, and in nicely prepared, porous soil, I can produce almost double the growth of these vegetables in a given time by doubling the ordinary overhead applications of water. It is surprising what large quantities of water Lettuce will take and delight in. Amateurs seldom give it enough for best effect. With a subirrigation arrangement this will be different. The application does not quickly show on the surface and consequently it is naturally more abundant than under the old method. The roots of the plants are kept well supplied with moisture all the time, and the growth, therefore, is rapid and healthy.

Herein, possibly, may also be found an answer to the question why the Tomatoes at the Ohio Station did not show as

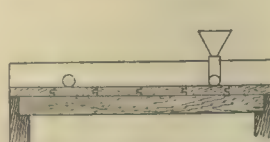


Fig. 28.—Cross-section of Bench.

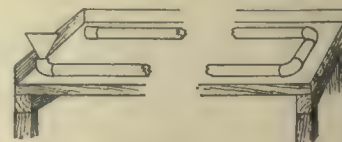


Fig. 29.—Subirrigating Pipe, in perspective.

much difference in favor of subirrigation as the Lettuce did. Tomatoes do not need the large amount of moisture required for rapid growth in Lettuce.

When water is frequently applied by sprinkling on heading Lettuces, rot is liable to attack the central portions of plants, and the lower leaves, resting on the continuously moist surface, will also decay by wet rot. Subirrigation prevents all these troubles. Possibly there may be advantages of the new method not yet mentioned; the future will tell us more about the subject.

Subirrigation in the garden is of no less practical importance. I think it is feasible, at least, on a small scale. What is to prevent the home-gardener from arranging a little plot on the same principle as the greenhouse bench? Of course, in

place of the expensive iron pipe, we will use lines of tile, laid six or eight inches deep, with each line fed from a box at the upper end. Very few experiments in this line have been made, or are thus far reported; but very many should and will be made hereafter. The "new Celery-culture," without some such plan of irrigation, for instance, cannot be expected to give its best, or even sure, results.

La Salle, N. Y.

T. Greiner.

For Beginners in Vegetable Culture.

I OFFER the following suggestions and list of vegetable seeds for the use of inexperienced gardeners, who want the most possible for the least expenditure of money and labor, or for a boy who is making his first venture in gardening:

Never disturb the ground by plowing, spading, hoeing or tramping on it while it is wet.

See that your garden spot is well enriched by spreading evenly over it, before plowing or spading, a dressing about two inches thick of well-rotted stable-manure at least a year old. If this is unattainable and you must use fresher manure, work it over and make it as fine as possible and then take great care to spread it evenly. If commercial fertilizer is depended upon, spread it evenly, at the rate of six to twelve pounds to the square rod after plowing or spading and before smoothing the ground in preparation for sowing the seed.

General directions as to distance apart and methods of culture can be found on the packets or in the seedsman's catalogue, but the seeds should be planted about in the order given:

Onion: one packet Yellow Globe Danvers. Radish: one packet Long Brightest Scarlet. Beet: one packet Detroit Dark Red or Crosby's Egyptian. Turnips: one packet Purple-top Strap-leaf. Lettuce: one packet Tilton's White Star or Black-seeded Simpson. Parsnips: one packet Hollow Crown.

The young plants of the vegetables named above are not killed by frost, and may be sown as soon as the ground is dry enough to work.

Peas: one-half pint Premium Gem, one-half pint Advancer. Corn: one packet White Cob Cory, one-half pint Moore's Concord or Country Gentleman. Summer Squash: one packet Mammoth Summer Crookneck. Cucumber: one packet Chicago Pickling or Cool and Crisp. Beans, Bush: one pint Challenge Black Wax or Pink-eye Wax, one pint Speckled Wax. Beans, Pole: one packet Horticultural Lima, if as far north as Boston, or one packet Challenger Lima, if south of that point.

Plant this second selection as early as possible, without endangering the young plants, which are liable to be nipped by frost.

Lettuce: one packet Deacon or New York, for summer use. Muskmelon: one packet Netted Gem, Emerald Gem or Osage. Watermelon: one packet Phinney's Early, if north of Boston, or one of Peerless or Boss, if south. Radish: one packet Chartier, for fall and winter use. Tomatoes: better buy twelve or fifteen plants—Early Michigan, Essex Hybrid or Perfection preferred. If raised from seed this should be sown in the house about April 1st. Cabbage: better buy twenty plants—Winningstadt or All Seasons preferred. If raised from seed sow out-of-doors at the same time as Turnips. Celery: better buy fifty plants each of Golden Self-blanching and Perfection Heartwell. If raised from seed start indoors at the same time as the Tomatoes. Cauliflower: better buy plants of Snowball or Extra Early Erfurt. If raised from seed it should be sown same time as Cabbage.

The last two, although easily grown when one knows how, will be more likely to fail without especial care than any of the others, and will give the smallest return for the skill and labor they require.

The above list of varieties is by no means what I would recommend as the best in quality or for an experienced gardener, but they are all good, and are the sorts most likely to give satisfaction under the conditions supposed.

Detroit, Mich.

Will R. Tracy.

Frost and Flowers.—After about three weeks of warm growing weather in March the low temperature a fortnight ago brought on a sudden cessation of growth for a few days and nights. In such conditions, with fifteen degrees of frost at night, a garden of plants in flower or in a forward state of growth is naturally a subject of some anxiety. As these cold days were also clear and sunny, there was added another element of danger from too rapid thawing, owing to which tender fibres do not have time to rearrange themselves after the threatened disruption by freezing. Looking over the garden in the early morning after a night temperature of fifteen to eighteen degrees at this season one would find all soft leaves

darkened with frost and seemingly lifeless, many flowers drooping, and a rather hopeless picture altogether. Yet, after a careful search in warmer weather, I found no apparent damage from the frost beyond the slight injury to the leaves of one small clump of Tulips and a slight scorching of a leaf or two of Iris orchoides. The latter was in a very sunny eastern location. The Tulips were Gesnerianas, and I have no theory to account for their having been singled out for attention among the numerous varieties in the garden, many of which were more exposed. Without mentioning the earliest plants which one expects to come through such trials unscathed, as a matter of course, the following are a few bulbous plants which passed the ordeal in safety: Calochorti, Brodiaeas, Gladioli, Zygadenus, Alstroemerias (near a wall), Irises in variety, Narcissi (a number in flower), Tecophilea cyanocrocus, Tulips in variety, Alliums, Camassias and Leucojums. As for plants other than bulbous which venture out at this season, one never gives them an anxious thought, provided they have been exposed during the winter. If, like the Poppies, they bow a few hours to the frost, they quickly recover their normal position. But it is always somewhat a matter of surprise that apparently delicate plants and soft juicy foliage prove so indifferent to a sudden chill. The flowers of the season are less injured by frost than by a few hours' rain. I can imagine conditions under which such a garden might be badly wrecked, though these are not likely to occur here. Possibly, with continuous warm rains, with rapid starting of foliage at this season, followed by hard frost, there would be much pulping of leaves. My experience this season simply confirms me in the belief on which I am in the habit of acting. This is to grow thoroughly hardy bulbs without mulch or protection, and let them run their course without endeavor to regulate them. This presupposes, however, that they have been planted at the right time and in the best position.

Elizabeth, N. J.

J. N. G.

Dendrobium Dalhousianum.—This is one of the most vigorous of all East Indian Dendrobiums, and one of the most easy to grow; it is very free-flowering, too, since flowers are produced from the same stems for several years in succession. Our plants were obtained as newly imported dry plants. We have grown them for two years, and each year a quantity of racemes have appeared from the apparently lifeless stems that were made in India, where they had also flowered. The peculiar fawn-colored flowers have two rich maroon blotches on the lip, which renders them very striking even to any one not interested in Orchids. The plant requires the warmest house when in bloom, and a cooler place for a few weeks when growth is over. It is always late in finishing up the long stems in autumn; our season is never too long for it, and, therefore, the resting period is shorter than with most Dendrobiums. The old stems should never be cut away until they are decayed and useless, for, as long as there is vitality in them, flowers will be produced in spring.

Fritillaria aurea.—Last spring we took occasion to note the value of this early and beautiful spring-flowering bulb, and this, the second spring after planting, further proves its value for the open border, as it is perfectly hardy and needs no coddling. There was a fine colored plate of this Fritillaria in the London *Garden* of July 23d, 1892, but the picture failed to do justice to the beautiful way in which the insides of the flowers are checkered with brown. It is also noticeable how the flowers vary, no two being marked alike inside, this probably being due to the fact that the bulbs are fresh from their native locality, the Taurus Mountains, in Cilicia, where it grows in alpine pastures. It is one of the earliest outdoor flowers with us, coming in with the first Narcissus. For its introduction we are indebted to Herr Max Leichtlin.

Double Hardy Violet.—When all indoor Violets are past, and the single and double ones in the frames are about to finish flowering, the value of this variety when grown in frames becomes manifest. It is the darkest blue of all the varieties, is not liable to injury from disease, and is perfectly hardy even here. What the real name of the variety is I am by no means sure. It is known locally as the Cape Cod Violet, and has been sold as the double hardy Russian, but that it is an old variety which has survived its name appears fairly certain. It would be interesting to know what it really is. The only objection to it is that the stems are often very short, especially when grown outdoors, but this is easily overcome when grown in frames by encouraging a free leaf-growth.

South Lancaster, Mass.

E. O. O.

Garden Peas.—From the number of garden Peas catalogued annually, it is each year more difficult to select from these a good variety or two for home planting. Where quality is the first

consideration, the list dwindles down to a very few, and, in my opinion, the Bliss American Wonder stands at the head. It is the first early, most productive, and needs no bushing, and without doubt, for small gardens, is the one Pea. For later use we plant the Champion of England largely; for quality it has no superior, and it is also a free bearer, its only objection being its height, which is often over six feet; of course, it needs strong support. It is not so liable to mildew as some others at the end of the season, and is, taken altogether, the best middle and late season Pea. Where the height of the last named is an objection, the Yorkshire Hero may be tried as a substitute; the flavor is also good, and the height is not so great as in the last named. These three Peas can be relied upon to give a good supply through the summer if sown at regular intervals, taking care to sow the first row of late Peas at the same time as the last lot of early ones are planted, or there will be an interval of a few days.

South Lancaster, Mass.

E. O. Orpet.

[It should be added to this that there are some soils in which the American Wonder Pea will fail outright. In places where it has never been tested those who want an early wrinkled Pea of the first quality would do well to make a planting of Alpha along with one of American Wonder.—Ed.]

The Iona Grape.—I should like to speak a word for the Iona Grape to those who are planting a vine or two for home use. It is in so many ways a remarkable fruit, and more people should enjoy it. The only difficulty is that the vine is not quite hardy. I am compelled to cover it here, and to do so carefully, but it well repays this care. The fruit is extremely abundant, and of such a quality as to delight any one who does not wish for more sweetness. It has a winy sparkling flavor that is highly refreshing. The bunches do not always perfectly ripen in this latitude, but if picked apparently half-green the grape has the peculiar faculty of perfecting and ripening in the house. Curiously, also, though very thin-skinned and juicy, the Iona is a splendid keeper. I find it better than Isabella even, and nearly as good as Catawba or Diana. Instead of deteriorating, its flavor improves with keeping. Brighton, from Iona parentage, is much earlier and a hardier grape, but it is not self-pollenizing, nor does it keep at all. It is one of the few excellent grapes that must be used at once. Every householder ought to have an Iona vine in some warm exposure for home use. It is just the grape for one who has a cultivated grape taste.

Clinton, N. Y.

E. P. Powell.

Correspondence.

Dimensions of Minnesota Pine.

To the Editor of GARDEN AND FOREST:

Sir,—The following dimensions of White Pine stumps and tops may be of interest, as they show probably the best development of scattered trees in hardwood that may be expected in Minnesota. One hundred and sixty-seven of these trees scaled 285,870 feet, board measure, an average of 1,712 feet to the tree. Ten hundred and seventy-nine of them scaled 1,117,567 feet, an average of 950 feet.

Much merchantable timber had been left in the tops, in several instances as much as 1,000 feet.

The dimensions of four of the largest trees ran as follows:

Stump diameter, in inches.	Top diameter, in inches.	Length of timber, in feet.	Timber marketed, in feet, B. M.	Timber left, in feet, B. M.	Height of tree, in feet.
40	28	70	3,500	500	131
45	35	56	4,050	1,100	120
48	32	36	2,900	1,200	122
40	25	70	3,200	350	126

A study of the annual growth shows something of the history of a tree. One of these, a representative tree, was found to have been cut when 253 years old. During its first fifty years the lateral accretions were minute, as it had a diameter of but eight inches when fifty years old. About the one-hundredth year, however, nearly half an inch a year was added to the diameter. From this time the accretions gradually diminished until the tree was cut.

In marked contrast with the large amount of log-timber left in the tops of trees cut eight years ago, was the clean cutting of last winter on the same land. In this latter cutting, trees having a nine-inch stump and a six-inch top were taken.

Carlton, Minn.

H. B. A.

Propagation vs. Extermination.

To the Editor of GARDEN AND FOREST:

Sir,—We frequently read of the danger of extermination of some of our rare plants by students and amateur botanists, but nowhere do I see any protest against the ravage of our native plants by professional commercial collectors. Every nook and corner of our southern mountains are now searched for floral treasures, and everything that can be sold as a living plant is dug up, and every bough and leaf which has any cash value for decorative purposes is also carried off, while no attempt is made to propagate anything except a few species which it is hard to collect and easy to grow. The so-called nursery-grown plants of many species are many of them simply plants collected and put into the ground just long enough to find a buyer. I have seen plants packed for shipment in such a mutilated state that with the very best care not half of them could possibly live. This is done not only on a small scale, but tens of thousands are taken at once.

Cypripedium spectabile can now be found only in isolated places, and seldom more than a single plant in a place. I have seen but one plant in the woods during the last two years, and that was found by a botanist who has worked here for years, and it was his first specimen; I was told by one of our nurserymen that he had orders for several hundred of them, and yet he never tried to propagate them and he did not know of any one who did. *C. acaule* is also becoming scarce. I spent considerable time last year trying to find a specimen, but failed. *Goodyera pubescens*, *G. repens*, *Orchis spectabilis*, *Habenaria pycnodes* and *H. blephariglotis* are a few of our plants that are becoming more rare, and no attempt made at propagation. *Pogonia verticillata* is a nice little plant with much more beauty than many that are quite popular, but it is so scarce that it has escaped being listed for sale.

I do not wish to discourage the cultivation of our native plants, but I do wish to call attention to the fact that if buyers do not demand a grade of plants which will compel nurserymen to propagate and offer them in better condition, it will not be long before many of our most beautiful ones will be practically exterminated. It might be added that many of our wild plants show a tendency to vary in color of flower, and if these sports were propagated some fine varieties might be procured and established.

Highlands, N. C.

James B. Smith.

A New Field for Seed and Bulb Growing.

To the Editor of GARDEN AND FOREST:

Sir,—In my opinion, California will be as well known, within a few years, for its bulbs and seeds as it now is for its fruits, as a large part of its flowers are Liliaceous, and no state in the union has such a variety of flowers belonging to this family as California. Watson says: "The order (Liliaceæ) forms a marked feature in the flora of California," and the same authority gives 119 species, besides innumerable varieties, as being native to the state. This was in 1880; since then many new species have been found. The heavy adobe soil seems intended for bulb-growing. I think this a promising field for some enterprising person. I have seen Tuberoses that were left in the ground by mistake, and when lifted, at the end of two years, over one dozen large-flowering bulbs were found for every one planted. They had been overgrown with weeds and would have doubtless done much better with proper cultivation; as it was they were as fine a lot as I ever saw. Bermuda Lilies were left out in the same neglected spot and gave like gratifying results. As there were several hundreds of each originally planted, the owner's negligence made a neat little sum. There are some vegetable-seed farms (or ranches) at Santa Clara, and flower-seeds are grown near Ventura. Mr. Lynch, proprietor of the Menlo Park Nurseries, raised, last year—his first season—nearly threetons of Sweet Pea seed. This year he has fifty acres sown to them; forty-seven acres will be devoted to the seed alone. The remainder will be for cut flowers, which are sent as far as Seattle and Salt Lake City.

Waukegan, Ill.

T. D.

Calanthes at Langwater Gardens.

To the Editor of GARDEN AND FOREST:

Sir,—Visitors to North Easton, Massachusetts, will always find some rare and beautiful Orchids in bloom at these gardens, for, although the collection is so large, Mr. Ames was very careful in his selection, so that it contains nothing inferior or commonplace. Among the *Calanthes*, for example, all the best and most recent introductions can be found here. Not long ago *Calanthe Gigas* was in bloom here for the first time

in this country, and I was impressed with the noble aspect of the plant as a specimen. It is a cross between *C. oculata gigantea* and *C. Sanderiana*, both of which are robust growers, but this plant is evidently stronger than either of its parents. Besides its beauty, the flower of the offspring has especial interest in showing to what extent the characteristics of each parent appear in it. In *C. oculata gigantea* only the base of the lip or eye is purple, the remainder of the flower being a pure white. On the other hand, the entire flower of *C. Sanderiana* is rose color, with a lip of deeper shade. The flowers of *C. Gigas* are large, with a lip of deep rosy-purple, and petals white suffused with purple.

Here, too, I saw *Calanthe bella*, a lovely hybrid between *C. Turneri* and *C. Veitchii*. Its color is an exquisitely delicate rose, with a deeper eye margined with cream-white. The spike arches gracefully, and the flowers are set closely so as to give it a much better effect as a specimen than many others have, especially those which belong to the *vestita* type. *C. Victoria Regina* resembles *C. bella*, but is a shade lighter. *C. Sandhurstiana* has the general form of *C. Veitchii*, but is much better in color. Another hybrid, *C. Barberi*, is an admirable white, much better than either of its parents, *C. vestalis* or *C. oculata*.

Wellesley, Mass.

T. D. Hatfield.

Recent Publications.

Injurious Insects and the Use of Insecticides. A new descriptive manual on noxious insects, with methods for their repression. By Frank W. Sempers. W. Atlee Burpee & Co., Philadelphia. 1894.

The little book under the above title is a useful and handy volume which ought to prove helpful to every practical farmer. There is a great deal of accurate information in it, and while it is by no means complete, we have observed nothing which is actually misleading. The author does not claim to be an entomologist, and as his book is mainly a compilation from authoritative sources, it occasionally shows the little inaccuracies inseparable from works of that description. The first part, devoted to insect classification and insecticides, gives an extremely generalized account of the orders of insects, the composition of the leading insecticides, the formulas for mixing and using, and of some of the nozzles and pumps that should be used. The formulas given are good, and the methods of use are sufficiently accurate. Part II. is devoted to orchard fruits, and the insects most troublesome to each are treated. The fact that the author is not an entomologist appears here and in the subsequent portions of the work, in an apparent lack of familiarity with the literature of the science. Contrary to the statement on page 70, the life-history of the apple-twig borer is completely known. The latest information concerning the pear-leaf mite, page 82, is not included, perhaps because the bulletin containing it had not come to hand. Better methods than those enumerated on page 85 can be used against white grubs, and the pear-midge is not mentioned at all. In Part III., devoted to the insects injuring small fruits, we find a few more serious omissions. The very complete life-history of the strawberry-weevil, and the careful experiments recorded in *Insect Life*, vol. v., are entirely overlooked. Under the Blackberry and Raspberry insects, there is no mention of the red-necked gall-maker, by all odds the most troublesome of the species injurious to these plants, and no account of the crown-borer or of the giant root-borer, which three species are more abundant and injurious in the eastern United States than all the others mentioned in the book. The work done in New Jersey on the Cranberry insects has been overlooked, and the accounts given are quite incomplete.

Part IV. is devoted to insects injurious to vegetables, grains and grasses. Under the cabbage-maggot there is no mention of the hellebore decoction as a remedy, which has proved so successful in several hands, and while kerosene-emulsion is recommended, there is no suggestion as to the proportion in which it should be used. The Cucurbitaceæ are sadly neglected, no mention being made of the melon-louse, which does more injury than all other species

combined, while the account of the squash-borer is quite inadequate. Sweet-potato insects are not mentioned at all. The "Boll-worm," p. 154, is treated only as a cotton insect; and while in the middle states its injuries to corn and early tomatoes are serious, nothing is said as to remedies in these cases. On p. 157, in treating of the corn-root louse, no mention is made of the success attending the use of the mineral fertilizers, while the root web-worms are not mentioned at all. In Part V., which treats of insects that infest domestic animals, the account of the "horn fly" is based entirely upon the report of the Kentucky Station, while the full accounts published by the United States Department of Agriculture, and by the New Jersey Station, seem to be overlooked. Without pointing out other errors of omission, those we have noted will suffice to show that this work must not be accepted as containing the latest knowledge even on the subjects which it discusses. As we said at the outset, however, it can be safely followed as far as it goes, and it will prove a useful addition to the practical literature in the libraries of farmers, gardeners and fruit-growers.

The Beautiful Flower-garden is the title of a little paper-covered book issued by Burpee & Co., and written and illustrated by F. Schuyler Mathews. The beginner will not find much definite and detailed instruction in it, but it will exercise a wholesome influence by opening to novices an inviting field where personal study ought to be profitable. Mr. Mathews holds that the best effects of a flower-garden are produced by arranging the various flowers with a view to their harmonies and contrasts of color, and the hints for arrangements which he gives ought to stimulate the reader to try others of his own devising and to endeavor to adjust his plants in accordance with their relative colors and in conformity to some well-considered color-scheme instead of jumbling them together haphazard. Persons who do not quite assent to Mr. Mathew's assumption that color is the all-important element in a garden arrangement, and others who might take exception to the way in which his more elaborate plans are cut up by walks and drives, and even those who could in no way be induced to give any hospitable welcome to such a beast as Mr. Mathews' Chinese dragon, constructed out of lath, cement and Nasturtiums, will find healthful suggestions in his spirited drawings which illustrate how groups of plants can be made effective. The book concludes with some very general, but, as far as they go, sound and practical directions concerning the cultivation of different classes of ornamental plants by Mr. A. H. Fewkes.

All About Sweet Peas is another of Burpee's little manuals, which has been prepared by the Rev. W. T. Hutchins, who knows whereof he speaks, for he has carefully tested the new Eckford varieties, and that he knows how to grow them well is proved by the fact that he carries off prizes wherever his flowers come in competition with others. The book contains a descriptive list of all the varieties and explains how these new kinds are produced, and then it gives elaborate details of the most improved methods of culture by which the largest flowers can be had in abundance and kept in bloom for a long season. Lest the novice should be alarmed by the somewhat voluminous and explicit advice, he can rest assured that the essentials of cultivation are comparatively few. The seed should be sown as early as possible in deep soil, which must be kept cool and moist, so that the roots will have ample space and have abundant food. They are best planted in a trench, say, five inches below the surface, in soil that has been worked deep, and should be covered with about an inch of soil. When the plants are up some three inches the soil should be drawn about them, so as to leave a couple of inches at the top above the surface, and this should be repeated at intervals until the furrow is nearly full. A slight hollow should be left for convenience of watering, for in dry weather it is essential that the plants should have all

the water they can use. A good mulch is a great help, as it keeps the roots cool and prevents evaporation. If all the flowers are cut off every morning, so that no seed forms, the plants will bloom until autumn.

Notes.

Some North River fruit-growers find that Black Caps do best when set between rows of Peach-trees.

An effort is being made by the planters of Ceylon to find an English market for the seeds of the Tea-plant. They contain some thirty-five per cent. of an oil which resembles Olive-oil in appearance and flavor.

A jewel-box, recently presented to Cardinal Gibbons, was made from a piece of the roots of a Mulberry-tree under which, at St. Mary's, in Maryland, it is believed mass was first celebrated in this region. The date of this service was March 25th, 1634, and when the tree blew down a few years ago it was thought to have been between 300 and 400 years old.

The *North-western Lumberman* asserts that, contrary to the belief of most persons, the largest amount of lumber used, even in this country, is not for building purposes. Only about thirty-five per cent. of the total amount is thus employed, while twenty per cent. goes to the making of boxes, and forty per cent. for railroad building, fencing and miscellaneous purposes.

Good pencil-cedar is getting so scarce that the great firm of Faber & Co. have begun to cultivate forests of Cedar (*Juniperus Virginiana*) in Germany. At Schloss Stein there is a Cedar-forest which covers thirteen acres, and the head of the firm has, for many years, maintained nurseries and plantations of Cedars on his land in Bavaria, grown from seed which he imported from Florida.

The Horticultural College for Women, established in England a few years ago, is reported as steadily prospering. The course it offers covers a period of two years, and each working-day consists of two hours of theoretical instruction, with five of outdoor practice. Pupils are taught to take charge of large estates as well as of gardens, and instruction with regard to poultry-yards is also given.

The University of Cambridge has decided to grant a diploma in agriculture to any candidate who successfully passes an examination in botany, chemistry, physiology, hygiene, entomology, geology, mechanics, engineering, book-keeping and surveying. We have seen a syllabus of the botanical subjects on which the candidate is to be examined, and if the examination in other sciences covers an equally wide field any one who receives the diploma will certainly deserve the title of Master of Agriculture.

The Pineapple, according to the statistics of the last year, ranks far above the banana or the fig, and not much below the lemon, in value as a domestic crop. More than 2,000 acres are devoted to its cultivation in Florida, and the estimates of the new crop from that state are fixed at something like 50,000 crates. The value of the crop last year was something like \$900,000, and almost an equal amount was imported from Cuba and the Bahamas. The supply is now continuous throughout the year, while a few years ago it was only known as a fresh fruit in a few seaboard cities during a few months.

Professor Munson, of the Maine Agricultural College, has issued a bulletin on Tomatoes. His experiments show that when plants are handled in pots, before they are set in the field, they are more vigorous and show a marked increase in productiveness over those which are set out in the ordinary way from boxes. It has again been shown that the productiveness of a given variety may be largely increased by crossing with some of the smaller but less valuable sorts, although such a cross-bred sort will quickly run out. Of the new varieties, Burpee's Climax, Maule's Earliest and Brinton's Best are noted among the most promising.

Mushrooms are just now a little higher, but all winter long the wholesale price has been steady at about fifty cents a pound. A great many more are grown in this neighborhood than ever before, and, perhaps, three times as many have been marketed in this city during the past winter as were sold the year before. The wholesale price of hot-house tomatoes has also held steady all winter at about thirty cents a pound, but these, too, have been much more abundant than ever before. Boston cucumbers retail for twenty cents each. String beans grown under glass come in little bunches of fifty pods,

which sell for twenty cents. Asparagus is coming from as far north as North Carolina. The cold weather has kept up the prices of all early vegetables from the south, peas, beans and asparagus being most seriously affected.

In a paper recently read before the American Society of Civil Engineers by Mr. James D. Schuyler, it was said that sixteen miles of thirty-inch wooden conduit are used in distributing water in the city of Denver, Colorado, in addition to a considerable amount of forty-four-inch pipe. California redwood was employed, and the cost of the thirty-inch pipe was \$1.36 per lineal foot, including the expense of trenching and back-filling. The pipes are composed of staves, smoothly dressed to cylindrical sides and radial edges, and held to a cylindrical form by encircling steel bands. The water under pressure fills the pores of the wood and oozes through to a slight extent, thus ensuring the preservation of the conduits. All the framing of the pipes is done in the trenches; their interior finish is so perfect that the best conditions of flow are secured; and Mr. Schuyler estimated that the use of wood for the purpose had saved the city over one million dollars. The first water-mains employed in New York were of wood, but much more rudely constructed than these. A section of one of them was found, two or three years ago, when excavations were being made in front of the offices of the *New York Sun*.

Two years ago, at the Iowa Experiment Station, the crossing of *Rosa rugosa* with other varieties of cultivated Roses was begun on a considerable scale, and something like 20,000 seeds were obtained from *Rosa rugosa* fertilized with pollen taken mainly from Hybrid Perpetual and Tea Roses. The pistillate parents are Russian types of *Rosa rugosa*, which vary considerably from those introduced from Japan and China, the Russian forms being hardier in the north, somewhat more graceful in habit, and earlier to flower. Some of the hybrids showed bloom last year, a few of them before they were four months old, and all of the flowers showed an increase from the five petals of *Rosa rugosa*. It was hoped that some new Roses might be secured for the prairies of the north-west, where the ordinary garden varieties only survive when carefully protected during the winter. But, so far, the experiment seems to show that the hybrids resemble the male parents in cultivation, although they flower at an earlier age, and they give no special promise of superior hardiness or freedom from mildew. It seems probable, however, that out of many varieties a few may be secured which inherit the hardiness of the mother plant, with leaves resembling those of *Rosa rugosa*, and flowers with something of the fragrance of the Teas and the special beauty of the Hybrid Perpetuals.

There are no California oranges in this market now, and there have been no good ones here this year. As a reason for this scarcity it has been urged that western cities have taken the entire supply, so that none of it has reached this market; but the fact seems now to be demonstrated that California oranges are not up to their usual standard this year. It may be that the freeze in the early part of January, while it did not injure the fruit, so checked the vigor of the trees that they were not able to ripen it properly. At all events, California oranges seem to be unusually light and juiceless. This lack of competition with California fruit has kept the price of late Florida oranges high, and many of them have been put in cold storage for later demand. It is also said that western cities which have been disappointed in the quality of the California fruit are now also looking to Florida for late supplies. Good Florida oranges now command \$4.00 a box. Grape-fruit brings a dollar to two dollars a dozen. For some years the demand for this fruit has steadily grown and has always been greater than the supply, so that the price has ruled twenty-five per cent. above that of oranges. There is a growing belief in the medicinal value of this fruit, and those who acquire a taste for it prefer it to oranges. To many persons it has become indispensable at breakfast, and it is also cut up and served at later meals after standing some hours in sugar. A Florida paper says that a grove of Grape-fruit has become a profitable possession, since fifty of the fruits fill a box, which brings more than a box of oranges holding from a hundred and twenty-six to two hundred. Catawba grapes of excellent quality can still be had at twenty-five cents for a five-pound basket. The only pears on sale are Winter Nelis, which command a dollar and a half a dozen. These pears have kept unusually well this year, while Easter Beurre decayed more rapidly than usual. Strawberries are comparatively scarce, owing to the cold weather in the south, but beautiful ones can be had from Florida at forty five cents a quart. "Crystallized figs" from California, in limited supply, readily bring fifty cents for a pound and half box.

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Lumbering on State Lands.

THE meeting of the American Forestry Association at Albany, in the early part of March, was held in response to an invitation of the Forest Commission of this state, and the reason assigned for holding such a meeting at this place and at this particular season was that it might help the Commission to obtain an appropriation from the state for the purchase of land in the Adirondack reservation. No doubt, also, the Commission appreciated the value of the moral support of the Forestry Association on other points—one of these being the approval of their action in selling spruce timber on the state lands. The Commission had a carefully prepared set of resolutions endorsing their policy. Substitutes for some of these resolutions were presented to the meeting by Mr. Fernow, asserting that it is not advisable to cut and sell any timber from state lands hereafter until a comprehensive and systematic plan of management has been devised, and such methods of supervision instituted as will ensure the permanence of the forest-cover and the reproduction of valuable kinds of timber. Another section affirmed that the practice of cutting all the Spruce above twelve inches in diameter might interrupt the forest-cover and impair the future of the forest. Colonel Fox made an energetic protest against these resolutions, and although most of the members whose opinions are worth considering favored Mr. Fernow's motion, a straddling substitute presented by Mr. Higley was allowed to pass, mainly because the matter was not considered of great importance one way or the other, and partly because the members were adjured not to vote in condemnation of the Commission whose guests they nominally were.

In the light of these resolutions, a report which the State Engineer and Surveyor, Mr. Campbell W. Adams, has just made to the Commissioners of the Land Office on the 29th of March, has an especial interest. The Forest Commission had passed favorably on forty-one applications to cut and remove the spruce from various parts of the state land, and had presented them to the Land Office for approval. This Board referred the resolutions to the State Engineer, asking him (1) whether, in his judgment, the trees covered by the proposed contract should be removed; (2) whether the method of removal, as provided for by the Forest Commission, is sufficient to protect the trees not removed; and

(3) whether the prices agreed upon were fair. Upon the last point the bargain was said to be largely in favor of the purchaser, especially since he was not required to pay the state any money until the end of three years, so that really the state furnishes so much capital for the lumbermen's stock of 250,000,000 feet, which can be cut from the 80,000 acres of state land which these forty-one contracts cover. Nevertheless, if the privilege was sold to the highest bidder the price cannot be called unfair.

The first two propositions, however, Mr. Adams answers with emphatic negation, and his vigorous argument ought to convince any one that neither the rights of the people nor the future of the forest have been properly considered in these contracts with lumbermen for the timber on state lands. It is very plain that after being lumbered under contracts like the ones proposed, all the Spruce ridges will be strewn with a net-work of tree-tops and limbs strong enough to hold up under the burden of the next winter's snow, and this, after a season's drying, will furnish tinder to kindle at the touch of the first spark into a fire which would sweep through the forest with resistless force. Every one of these ridges, once burned over, will lose at once and forever its chief value to the state—that is, its value as a preserver of water. The contract provides that the purchaser shall cut his trees in a "workmanlike manner," and that means in accordance with the practice of skilled American woodsmen. Every one knows that it is workmanlike for a logger to fell his trees so that he can move his logs at the least expense and not to fell them with a view of saving the small trees which they may crush. The removal of logs in a workmanlike manner implies cutting roads to the streams, and it means what is still worse, damming the streams for driving, and the water thus set back about the roots of the trees above will kill them and leave a fringe of death about every lake and along every stream.

Some documents which accompany this report, notably a letter from Mr. Morton S. Parmelee, a lumberman of Malone, in this state, and another from the Committee on Forestry of the New York State Association for the Protection of Fish and Game, strongly reinforce the arguments of the State Surveyor. In addition to the great increase of danger from fire, it is shown that these contracts offer a much freer opportunity for trespassers. A block of timber with an unbroken frontier can be protected, but a block broken by radiating lumber-roads opens avenues for trespass on every side. It is argued, too, that the revenue which is expected from the sale of timber will be largely consumed in the added cost of protecting what is left from fire and timber thieves; that, indeed, it would take the entire militia of the state to watch the park when once cut up in this way. The few dollars which the state will receive for the timber, after the increased expense of management and protection is subtracted from it, will be a pitiable offset to the loss of integrity which the forest will suffer. In short, this policy, if consistently carried out, will leave hardly one acre of primitive woods in the wilderness outside of private reserves, or a single place where its original beauty has not been marred by the ravages of man. Besides this, the deer, which are helpless in heavy snow, will be at the mercy of the men and dogs about the lumber-camps when every thicket of Spruce, where they find shelter, is invaded by loggers. At the opening of the session the Governor stated that the standing Spruce timber above twelve inches in diameter has already been sold on more than seventeen thousand acres of state lands. This means the ravage of twenty-seven square miles of timber, itself a park of magnificent proportions, and these new contracts cover four or five times as much more territory. It would seem that the time has already come when the park ought to be preserved from its preservers.

If the buffalo in Yellowstone Park had been properly protected they would now have-numbered some four or five hundred, but it seems to have been proved that a very

general slaughter of these animals has been going on during the past year or two. A well-informed correspondent of *Forest and Stream* asserts that in Colonel Anderson's opinion there are not more than two hundred or two hundred and fifty left. Since the head of a buffalo is worth from \$200 to \$300, and the butcher can do his work with little danger of detection and still less danger of any punishment, any measure looking toward the protection of the public property in the park will improve the present condition of things. We are, therefore, pleased to know that Mr. Lacey's bill for punishing crimes in Yellowstone Park has passed the House. Under this act any person who kills or captures within the limits of the park any animal, bird or fish, unless authorized to do so by regulations made by the Secretary of the Interior, shall be punished by a fine not exceeding a thousand dollars or by imprisonment not exceeding two years, or by both. The park is also by this act placed under the jurisdiction of the United States, so that all the laws applicable to places under such jurisdiction shall be in full force in the park. If any offence which is not prohibited or punishable by the laws of the United States shall be committed within the park the offender shall be liable to punishment under the laws of the state of Wyoming. For the purposes of this act Yellowstone Park is constituted a portion of the United States judicial district of Wyoming, and the United States court for this district is to have jurisdiction over offences against the laws of the United States committed within the park. Persons who are familiar with the conditions of the park feel that this law is inadequate in some particulars, but certainly it is a step in the right direction. Under the present laws and regulations there is no object in the park, whether animate or inanimate, which is safe from vandal attack, and, indeed, the so-called protection of the Government has been, in fact, little more than an advertisement to head-hunters that elk and buffalo and other big game have been gathered into this great pleasure-ground of the people so that they could be hunted and butchered with ease and impunity.

Notes of Mexican Travel.—VII.

IN JALISCO.

THE state of Jalisco, by its varied flora, held me closely throughout my ninth season of botanical exploration in the Mexican Republic. I arrived in Guadalajara, its capital, at the beginning of May last, and kept that base until I left the country in the middle of November.

The rains had not commenced when I entered the state, and its plains and hill-sides were brown and dry, as I had never before seen them, for the springs and rills were nearly all dry, and most of the trees and shrubs were still leafless. The few plants gathered during the first two months of my stay were dearly won by diligent gleaning of wide wastes. By the second week of June thunderstorms were advancing, evening by evening, from the southeast over the coast mountains of Michoacan. These soon traversed the entire state, and were seen, if not encountered, each afternoon with unfailing certainty. About the 1st of July all the landscape was covered with unfolding verdure, and from the middle of that month to the middle of October hosts of plants crowded upon the collector wherever he wandered. The last thunder-shower of the season occurred on the 7th of October, and then followed almost cloudless days in long succession. The sunshine was still warm even on the table-lands, and under its influence the soil rapidly dried again, the springs and brooks ceased to flow, and the ripening and passing of the vegetation was as swift as had been its rise and unfolding. On the highlands a few light frosts fell during early November to complete the destruction of the plants and to turn the botanist homeward, unless he chose to glean in the coast regions.

Next to the four great states of the arid regions of the

north—Sonora, Chihuahua, Coahuila and Durango—this state of Jalisco is the largest within the Republic. It is certainly the most populous and wealthy of all, and is second to none in fertility of soil. During the six years of my visiting it I have never known its varied harvests to fail in any degree. I have turned from other districts in years when rain failed to visit them, distressed by the sight of the hunger and squalor of their inhabitants, to find the Jaliscenses as well fed and as happy as ever. Lying upon the southern verge of the table-land and bordering the Pacific, this state is within the belt of abundant and unfailing summer rains, and this situation also ensures a climate which is nearly perfect. Its winter frosts are restricted to the higher lands, and even there are few and light. The Andean system, when passing through Jalisco, appears to be depressed or broken up. There are few elevations above 9,000 feet over sea-level, or 3,000 to 4,000 feet above the average of its plains. Here are many extensive plains, valleys and slopes of excellent fertility, and all of these are natural grazing-grounds in summer and winter. Wide fields of Wheat whiten the valleys in spring-time, and yield place to luxuriant crops of Maize in autumn, when the hill-sides up to the very summits are checkered with grain-fields. Toward the coast Cane-fields and Coffee-plantations abound, and in the various conditions offered by this state flourish the fruits of the entire list, tropical and temperate. Yet, notwithstanding so great prosperity, there is forced upon the observer the fact that the capacities of the soil are but half-developed.

Until within a few years Jalisco has lain remote from the activity and progress of the world. Its capital was only reached by a journey of several days by diligence from the city of Mexico, or by long rides in saddle and diligence from the seaports of Manzanillo and San Blas. To-day the tourist is conveyed in a Pullman car over a branch of the Mexican Central, diverging from the main line at Irapuato. A ride thence of only seven or eight hours along the fertile valley of the Lerma brings him to Guadalajara, the proud "Pearl of the West," as the Mexicans style this beautiful city with white-walled palaces and churches and flowery, umbrageous parks, a city second in size only to the national capital. It is situated on an undulating plain at an elevation of 5,000 feet above sea-level. In all directions from the city the view is bounded by hills either of volcanic or of granitic formation, five to ten miles distant, and 1,000 to 2,000 feet higher than the plain. Some of these hills appear of the most rocky and rugged character; others show softer lines, and are covered with a sparse and low forest composed chiefly of *Pinus oëcarpa* and *Quercus fulva*. Twenty-five miles away to the south, beyond several small lakes, rises a chain of mountains some 8,000 feet in altitude, while in the west and north-west, thirty to forty miles distant, appear summits quite as elevated. These higher mountains are clad with forests in which *Pinus Montezumæ*, *Quercus reticulata* and *Q. grisea*, and *Arbutus varians* are the more important species.

Every visitor to Guadalajara must see the great barranca. Passing northward over gravelly swells for five or six miles, one comes to the brink of a river-cut 1,500 feet deep. In the bottom he sees the Lerma, or Santiago, foaming white in its swift descent to the sea. The width of this barranca, from plain to plain, is about a mile. On its sides steep slopes alternate with sheer precipices hundreds of feet in height. The upper slopes are either open and grassy, or are covered with woody growths of numerous species. The lower or more accessible slopes are occupied by plantations of Bananas, Oranges, Mangoes and other tropical fruits; for into this gorge, where are gathered the warm rays of the sun, frosts and mountain breezes cannot descend. A paved trail, two miles in length, leads down to the river by zigzag windings over successive terraces, along the verges or bases of cliffs, and through dark alleys in Banana fields. The banks of the river are shaded by immense wild Figs and Cypresses. Beneath the shade is an Indian village, the huts being of the simplest construction, loose

walls of rock, surmounted by a thatch of coarse grass. Here, despite the shade, we find ourselves in the oppressive temperature of the tierra caliente. Passengers and freight are ferried across the river in rude canoes, while the beasts of burden are made to swim over. From the farther side of the river the traveler climbs out of the barranca by a trail equally long and difficult. During all the day there is a ceaseless stream of travel crossing this frightful chasm.

As I have descended into this barranca almost daily for weeks of several different seasons, and have searched about its cliffs of various exposures, clambered over its dizzy slopes, or crowded through its thickets, it has seemed that the number of plants which it holds must be inexhaustible. Each year it has yielded new species. Yet this is but the first and uppermost of the barrancas of the Santiago and its tributaries. For a hundred miles toward the coast there is a labyrinth of barrancas, whose wildness and grandeur are wonderful, and similar barranca systems have been formed by every stream which flows down from the table-lands.

During five seasons I had sojourned in Guadalajara for a few days or a few weeks at a time in different months of the year to work the surrounding country, its hills and plains, as well as its barrancas, and had taken out many hundreds of species; so my return last May was only to secure for general distribution certain new or rare species known to me, and to make one or two trips toward the sea before moving to a distant and fresh field. But while this object was being accomplished, so many plants offered themselves to my hand which were strange to me and promised novelty, that I kept to this field until the end of the season, and then brought out a richer harvest than ever before.

Among the finds of the past season the following are selected as possessing cultural value:

Vigna strobilophora, Rob., n. sp., is a twining vine with a woody stem about an inch thick (see fig. 30, p. 155). It climbs into the tops of shrubs and low trees, and shows abundant flowers which rival in beauty those of the cultivated *Wistaria*. The flowers are purple and white, and are borne in dense racemes two or three inches long. This plant and the next two belong to the Pea family.

Eriosema multiflorum, Rob., n. sp., is shrubby, two or three feet high, with branches terminating in several dense racemes of yellow flowers. It is a showy plant and remains in flower a long time.

Tephrosia macrantha, Rob. & Greeum, n. sp., to be described and illustrated in a following number.

Nemastylis flava, Rob., n. sp., is a pretty little Irid with yellow flowers less than an inch in width. It rises from a bulb.

Ipomœa perlonga, Rob., n. sp., a climbing Morning-glory, with numerous clear blue flowers with white throat.

Vitex pyramidata, Rob., n. sp., a small spreading tree found on rocky bluffs above Tequila; it is covered in June with large panicles of deep blue flowers. A flowering tree; is an unique object and shows to a distance.

Ehretia cordifolia, Rob., n. sp., a large tree of the Zapotlan district; when first seen it was profusely covered with large clusters of white berries, and elicited my admiration.

Eriodendron tomentosum, Rob., n. sp., is a large tree of warm barrancas, the bark covered with sharp bosses, with leaves resembling those of the Horse-chestnut, and white flowers six inches in length borne singly.

Two asclepiadaceous vines twining to ten feet, *Mellichampia rubescens*, Gray, and *Gonolobus atratus*, Gray, discovered in the vicinity of Guadalajara in 1886 by Dr. Palmer, deserve mention in this connection. The former is showy with profuse rosy flowers, which are large for this family. The latter is interesting by reason of its large star-like flowers, which are purplish black.

Charlotte, Vt.

C. G. Pringle.

Botanical Notes from Texas.—XVII.

IN the woods around Eagle Lake grows *Elephantopus Carolinianus*, Elephant's-foot. This is a more eastern and northern species and it extends much farther westward. Growing in the sand near the lake, *Rhynchosia menispermoidea* may be seen. It is a species with a single leaflet. It has already been noticed as extending westward to Duval County, R. Texana, with three leaflets and similar flowers and fruit, is common.

During the last thirty days I have had abundant opportunity to interview all our species of *Sesbania*. *S. Cavanillesii* and *S. Vesicaria* abound everywhere in damp places. They sometimes grow on gravelly hills. *S. macrocarpa* is rarer. Their continued presence along my line of travel has enabled me to determine some points in regard to their differentiae. Most individuals of the first-named species bear light yellow flowers. Some of the plants, however, produce flowers which are orange-colored and marked with fine transverse purple lines. No difference is apparent in the fruit of these variant forms. The flowers of *S. macrocarpa*, too, are large and yellow. The wings of the flowers, however, are sometimes splashed with red. The fruit of this species is sometimes a foot long, a fact of which its specific name is significant. The flowers of *S. vesicaria* are very small. They are not one-half as large as those of its congeners. Its flowers are never yellow, but are always red, though the banners of the flowers sometimes mix a little yellow with their red. The pods of this species, which are about two inches long, are only two-seeded. The membranous lining of the pods becomes white at maturity. It is indehiscent, and protruding as the pods open, appears like a lolling tongue and gave to the species its former generic name, *Glottidium*.

Growing everywhere throughout central Texas, in sandy soils, is a large and coarse, but not homely, Composite, *Heterotheca subaxillaris*. It is common also in the "Territory" and in central Kansas to beyond the thirty-ninth parallel. *Aplopappus divaricatus*, another Composite, usually grows with this species, and throughout nearly the same range. These are not aristocratic plants; they are only common folks of the vegetable kingdom. But, like humble human common people, their lives and labors assist in making possible the existence of the so-called higher classes of plants and men.

Erythrina herbacea, a queer-looking member of the Pea family, is sometimes to be seen in the vicinity of the lake. Farther eastward it becomes so frequent, and so much in the way of more useful plants, that farmers do not like it. Making a woody stem six to ten feet tall, it is hardly herbaceous in Texas. Its prickly stems, smooth, nearly nerveless leaves, deltoid-hastate in outline, long terminal spikes of bright red flowers, which unjoint very readily, and large, coarse pods containing beans, colored like the flowers which they succeed, serve to make the species readily known.

Eagle Lake is set in a border of shrubs and trees. Live Oak is the most common tree. Some of the larger and more venerable ones, doubtless, remember when Miller named the species. They all appear to be well pleased that it is once more *Quercus Virginiana*. Post Oak, Water Oak, Bur Oak and Black Jack are also in the lake-woods; and Hackberry, Soap Berry (*Sapindus*), Red Mulberry, a small-fruited Thorn Apple, an *Ilex* (probably, *I. Caroliniana*), stately Pecan and other *Hicorias*, wide-spreading Elms and graceful Box Elder. Most of these trees, living or dead, are festooned with long pendent gray moss (*Tillandsia*), imparting to the forest a sombre and funereal aspect. And there are Willows here, hanging over the water—Willows that in all ages have been associated with times of grief and mourning.

Kansas City, Kansas.

E. N. Plank.

Foreign Correspondence.

London Letter.

RHODODENDRON SCHLIPPENBACHII.—Flowering branches of this Chinese species of *Rhododendron* were shown last week by Messrs. J. Veitch & Sons, who have recently introduced it, and with whom it has grown and flowered as freely as *R. Sinensis* (*Azalea mollis*), to which it is closely allied. It is a loose-growing shrub, attaining a height of a yard or more, deciduous, with obovate leaves four inches long by two inches wide, hairy when young and of a dark brown hue. Probably the leaves turn green and lose much of their hairiness with age. The flowers are somewhat flattened, as in *Azalea indica*, three inches across, with obtuse lobes and colored a pleasing rosy-lilac, with a few

brownish dots about the base. There were six flowers in a cluster on some of the branches. The plant is almost certain to be at least as hardy as *R. Sinensis*, coming, as it does, from the wooded hills of Corea, where it was discovered by Oldham in 1863. A figure of it has been prepared for the *Botanical Magazine*.

ANDROMEDA SPECIOSA CASSINIFOLIA.—A group of plants in flower of this pretty little shrub was shown last week by Messrs. Veitch & Sons. They had been grown under glass, forced a little, perhaps, and they were heavily laden with clusters of white bell flowers like glorified Lily-of-the-valley flowers. The brown wiry stems and ovate-glaucous green leaves set off the pretty flowers to advantage. The plant is quite hardy here, but out-of-doors it never looks so pleasing as did these plants which had been lifted and kept in a house for a few weeks.

FORSYTHIA INTERMEDIA was awarded a certificate, some sprays of it being shown by Messrs. G. Paul & Son. It is a hybrid between *F. suspensa* and *F. viridissima*, and is well named, being intermediate between the two. It was raised on the Continent some years ago. It is better than *F. viridissima*, but inferior to *F. suspensa*, which is one of the most glorious of all our spring-flowering shrubs. This year it is exceptionally good.

HYBRID NARCISSI.—Some beautiful hybrids and crosses among Narcissi have been raised in recent years, and one of the most successful raisers is the Rev. G. H. Engleheart, of Appleshaw, who exhibited a collection of his seedlings at the Royal Horticultural Society meeting last week, when a special effort was made by the Narcissus cult. Some of the seedlings were of value as proving the origin of many popular varieties which had been raised, no doubt, long ago, but whose history had not been recorded. The most distinct of the new combinations was a cross between *N. triandrus* and *Empress*. This had flowers as large as those of *Empress*, but with a long plain tube of the palest lemon-yellow shade. Another called *Snowdrop*, from *N. cernuus* and *N. triandrus*, had large drooping flowers with broad segments and a tube one and a half inches long, nearly an inch wide at the mouth, the margin not reflexed, and the whole flower milk-white. *Pallidus præcox*, crossed with *cernuus*, had produced a flower which might be called a pure white *Empress* or *Madame De Graaf*. *Emperor*, crossed with *Maximus*, had resulted in a fine *Daffodil* of a rich yellow color. Mr. Engleheart said this cross gives excellent color, but almost always smaller flowers than the parents. *Poeticus*, crossed with *triandrus*, had yielded a series of pretty forms, and a white seedling *Vesta* was particularly noteworthy. Clearly it is possible to add considerably to the value of the Narcissus, great though that value is at present, by judicious cross-breeding. Messrs. J. Veitch & Sons perceive this, and their collection of hybrids and crosses, shown last week, was almost as interesting as that of Mr. Engleheart. Among the general collections of *Daffodils* shown for prizes I noted the following for their excellence: *Yellows*—*Golden Spur*, Sir Watkin, Henry Irving, *Maximus*. *Whites*—*Katherine Spurrell*, *Minnie Hulme*. *White*, with yellow corona—*Empress*, *Queen Bess*. *Yellow*, with orange corona—*C. J. Backhouse*.

BEAUMONTIA GRANDIFLORA.—This is a magnificent Apocynaceous climber, which requires plenty of space, liberal treatment and a sunny position in an intermediate house, when it will develop in early spring enormous clusters of white fragrant trumpets, as beautiful as the flowers of *Lilium longiflorum*, and not unlike them. In the gardens of Earl Cowper, at Panshanger, it has been an annual attraction for many years. This year it is as fine as ever, two large bunches of it being shown at the Royal Horticultural Society last week. For some reason it was called variety *superba*, although it is exactly the type as represented in the *Botanical Magazine*, t. 3213. The species is a native of the eastern Himalaya, where it scrambles up trees to a great height. In a stove it grows freely, but does not flower well. At Panshanger it is treated something like a vine, the shoots being cut back to a spur, and it is grown in a

house in which the temperature falls to fifty degrees in winter.

ASPARAGUS PLUMOSUS SANDERL.—This was awarded a first-class certificate, presumably because it is inferior as a decorative plant to the several varieties we already possess. It differs from all others in its short, apparently aborted leaves, which are scarcely an eighth of an inch long; in all other respects it is *A. plumosus nanus*. I am bound to add that it was admired by some authorities, the fact that it got the highest form of certificate implying that it pleased the majority of the members of the Floral Committee.

TETRATHESA ERICOIDES.—This is a lovely little greenhouse shrub when grown as Mr. Balchin can grow it. He exhibited a group of it last week, which won universal admiration, each plant being about eighteen inches high, with numerous elegant shoots clothed with Heath-like leaves and wreathed from top to bottom with the richest rose-purple flowers. It is one of the prettiest of what used to be grown and loved here under the name of New Holland plants.

There was a fine exhibition of new and choice Orchids. Baron Schroeder sent grand spikes of rare *Odontoglossums*, including *O. Wilckeanum*, *O. Ruckerianum*, *O. crispum* *Schroederianum* and *O. Piscatorei Schroederianum*; glorious flowers all these were. Three plants of his new hybrid *Lælia vetellina*, one bearing a scape with three flowers, were most attractive to connoisseurs. It is a superb *Lælia*, and, although its parentage is unknown, its beauty is beyond all doubt, the flowers fully five inches across, in form not unlike *L. Perrini*, while the color is of the richest, dazzling apricot-yellow, with the narrowest white frill-like margin to the lip. Messrs. Veitch sent a new hybrid *Dendrobium* called *Euryalus*, and raised from *D. nobile* and *D. Ainsworthii*. It has large flowers as rich in color as *D. nobile nobilius*, with the large lip almost wholly covered with a deep maroon-crimson blotch. It was awarded a first-class certificate. *Phalænopsis F. L. Ames*, the hybrid between *P. intermedia* and *P. amabilis*, was shown in good form. *Cymbidium eburneo-Lowianum* was better than it has yet been seen, a scape bearing eight large yellowish flowers being borne by the plant. *Epidendrum Endresio-Wallisii* is another pretty little Veitchian hybrid with stems a foot high, short rigid leaves, and flowers colored brown-purple, with magenta lip. The beautiful white-flowered *Phalænopsis Schilleriana vestalis* was sent by Mr. Wigan, and Mr. Cookson sent a noble specimen of *Dendrobium Venus*, his hybrid between *D. Falconeri* and *D. nobile*. The plant was two feet high, with twelve stems clothed with flowers usually in pairs on slender pedicels, each as large as *D. Falconeri* and as rich in color as such a cross could scarcely help being. *D. Rolfeæ* is an interesting hybrid between *D. primulinum* and *D. nobile*. Two plants of it were shown. It resembles the last-named in form and color of segments, but the lip is more like that of *D. primulinum*, covered with velvety hairs, yellow, with a rosy tip.

Sir Trevor Lawrence sent a collection of forms of *Dendrobium superbum*, the type, the variety *Huttoni*, which is white, except the blotch on the lip; the variety *Barkei*, which is wholly white, with the faintest flush of pink, and *Dayanum*, generally called *Anosmum Dayanum*, which differs from ordinary *superbum* only in having a truncate lip. *Dendrobium Cheltenhamense*, also shown by Sir Trevor Lawrence, is a hybrid between *D. aureum* and *D. lateolum*, with large flowers, colored cream-yellow, with a few lines of red on the disk of the lip.

Phajus Sanderianus, with tall well-flowered scapes, was very handsome as shown by Messrs. F. Sander & Co., its rich crimson-brown segments and maroon lip, margined with rose, being very much finer than hitherto seen. *Cœlogyne Dayana*, from the same establishment, was also well shown.

Messrs. J. Veitch & Sons exhibited some improved varieties of *Anthurium Scherzerianum*, those in the way of the

mottled Rothschildianum being larger in spathe and better in color than any yet raised.

A collection of flowering branches of hardy trees and shrubs, sent from Kew, was a prominent feature in the exhibition.

A lecture on the rare trees and shrubs in the Arnold

former. The feeling created by the paper was that in the cultivation of hardy flowering trees and shrubs America is far more successful than we can ever hope to be, but that in the management of Coniferae we are in advance of anything done Boston way. Monsieur Vilmorin spoke very



Fig. 30.—*Vigna strobilophora*.—See page 153.

Arboretum, by Monsieur Maurice de Vilmorin, was an important item in the programme for last Tuesday. Monsieur Vilmorin described some of the most striking of the plants he saw, and compared the behavior of many of them with what they do in Europe, generally to the advantage of the

highly of the arrangement of the trees, etc., and their management in the Arnold Arboretum. As his lecture will be published in the journal of the society I need not refer at greater length to it now.

London.

W. Watson.

Cultural Department.

Winter Pears.

DURING the past winter I had Anjou pears until February in fine condition, though never before later than the first of January. The excellent qualities of this pear place it in the very front rank, and its power to last until midwinter is a strong point in its favor.

Kieffer, which is generally considered and marked as an October and November pear, is really a January pear. I imagine much of the prejudice against it has arisen from the effort to eat it when it first turns bright yellow, which is in October or November. But if carefully stored in a dark cool cellar where there is a slight moisture the Kieffer is one of the best holiday pears.

The Reeder, or Dr. Reeder, is another good winter pear. I do not find it equal to the catalogue description—"a delicious pear for amateurs' use"; but it keeps well until nearly midwinter, and is a good dessert fruit. The tree has a habit of bearing early and heavily, and it will, therefore, be appreciated by those in haste to get fruit. A tree seven feet high on my lawn was loaded with fruit, and yet made a good new growth of wood.

The Winter Nelis is known to all Pear-growers. While its appearance is far from attractive, it is really a fine late keeper. It requires good storage, when December will bring it to perfection.

Lawrence, for an early winter pear, is unsurpassed for those who choose sweet fruit. The chief trouble with it is bearing too early and too much. To get excellent fruit you must thin out severely in summer, otherwise one-third of the crop will never have any flavor. This third will, in fact, lie in your bins without ripening until it is decayed. For this reason the Lawrence often disappoints purchasers, for a certain proportion of them is never eatable. They are just as worthless for cooking. I think the Reeder on large trees must also require very sharp thinning.

Clairegeau is hardly a winter pear, although it will keep well till about the first of December. It is a magnificent pear in appearance, weighing sometimes nearly a pound by the basketful, and is so brilliant in color that it always satisfies the eye, at least. But after twenty-five years' experience with it I cannot recommend it for general planting. If stored until the bright crimson cheek becomes delightful to look at, the least handling will cause the fruit to blacken. It is not often of the best quality for eating.

Josephine is a pear that keeps all winter, but I have not fruited it often enough to make sure that its quality is quite all that has been claimed for it. It bears on young trees in clusters. In appearance it is something like a small Anjou.

The Beurre d'Aremberg is not quite a satisfactory tree for crops, but I cannot overcome a strong desire for this pear in March. It is quite tart, but to my taste an admirable pear. It is very juicy and of good size. Its shy bearing does not adapt it to become a market fruit.

The secret of success with winter pears is leaving them on the trees rather late, or until sharp frosts, and then storing them in very cool cellars near the floor. I cover my bins with papers laid over thickly. The handling should be perfect, and the assorting done with great care. I regret to find that nearly all of our winter pears are sent to market very carelessly, and prematurely picked and ripened. They really are not ripe. Dropped and shaken pears should, of course, be placed in separate bins. It is a fruit worthy of greatest care. In case, however, October is unusually warm, I have found it necessary to pick my pears earlier and get them into cool storage.

Clinton, N. Y.

E. P. Powell.

Methods of Setting Out Fruit-trees.

THE perennial tale, about the two men employed in planting an orchard, one of whom planted ninety-five trees in a day, and the other but five, of which all thrived, while the others all failed, no doubt contains an instructive suggestion; and yet I have seen it the cause of a great deal of that waste of time which is a waste of money. I think it quite safe to say that there is no need of using up a day in setting out five trees of ordinary nursery size in any soil suitable for an orchard.

In the first place, it is a great mistake to dig a very large and deep hole for such a tree; and a greater mistake to waste time and money in mixing manurial substances, and especially animal manure, with the earth to be replaced about the tree. No experienced fruit-grower would think of starting an orchard

upon a barren and poverty-stricken field. No money can be made in planting fruit-trees upon naturally poor or otherwise unsuitable land. If a naturally good soil, but somewhat worn, is chosen, the first thing to be done is to get it into good condition before planting any trees. In the selection of land for this purpose I know of no better rule than to take land such as originally bore a vigorous growth of native deciduous forest-trees. Where these thrived, there is no good reason why any of our tree-fruits should fail. It is true that there is a difference between a light and a heavy soil in regard to their adaptation to particular kinds of tree-fruits, and heed must be given to this fact. Good orchards are grown upon somewhat heavy soils, provided there be good natural or artificial drainage; but a medium soil is best.

If there is good drainage and a proper soil there is no use in digging the holes any broader or deeper than will enable the planter to place every root of the young tree in a natural position, and at the same depth at which it grew in the nursery. The true secrets of success are to have vigorous, well-formed young trees, carefully dug, with abundant length of unmangled roots, and to set them firmly, working in the soil solidly against and about every root, applying no manure, and using no water. The best instrument for this purpose is the hand. Increasing experience has taught me that it is wise to lean the young trees about twelve degrees from the perpendicular toward the prevailing summer winds, the winds that blow strongest while the trees are in leaf. All mangled or bruised ends of roots I cut smooth, with an under cut. The roots should all slope downward. In suitable land, free from large stones, one capable man can dig at least forty holes suitable for three or four year-old nursery-trees, and two men, or a man and a boy, can set the trees well, all in a single day.

Newport, Vt.

T. H. Hoskins.

Winter Protection of Half-hardy Plants.

DURING recent winters I have been studying the best methods for protecting half-hardy plants, and am satisfied that many species of plants might be carried over in the open ground with careful protection, even in climates more severe than ours. A large number of plants and roots will endure severe cold if they are kept dry, that would be destroyed by moisture. A water-proof cover is, therefore, sometimes necessary.

The stumps of Rose Geraniums are generally carried over with a simple mulch of Pine-leaves, and as the plants get old and woody at the base this protection is sufficient for ordinary winters in this latitude. But the exceptionally severe January of 1893 showed that this sort of covering is not always adequate. Even in that extreme weather, however, when the temperature was almost at zero, *Erythrina crista Galli* wintered safely under a mound of sawdust, a material which water penetrates very slowly, while another plant under a mound of soil much deeper was entirely destroyed. During the past winter we have had cuttings of Cassava buried and covered with Pine-leaves. Over this cover was placed a water-proof paper hay-cap. The Cassava has come through in fine condition for planting, and I am certain that it would have done so had the winter been even more severe. Some small Fig-trees were bent to the ground and covered with soil, as I formerly did in Maryland, but the cover was too close and warm for this mild winter, and many of the stems rotted. The stems and limbs of other Fig-trees were thatched tightly with broom-sedge, and these came through in splendid condition. But with plants that lose their leaves, like the Fig, in this climate, the past winter was a bad one to test any protection, for the check trees, left fully exposed, are better off than any of the protected ones. Had the winter been severe like the preceding one the buried Figs would have wintered better than those unprotected. Oleanders that had only a few green pine-boughs around them in the winter of 1892-93 were then killed to the ground. These plants were also thatched with broom-sedge during the past winter, and have come out green, but it must be added that Oleanders in sheltered places without cover have lost only their tender tips.

Of bulbous plants the more tender varieties of Narcissus are more liable to injury here than northward if planted in fall, as they start an untimely growth. If the planting is deferred until Christmas or January they do finely. Polyanthus Narcissus planted last fall, or, rather, allowed to remain from last winter's planting, had their flowers cut down by the cold late in February. Some planted in the fall of 1892 were entirely destroyed by the January cold of 1893, while others not set until the freeze was over gave a fine bloom and made good bulbs. *Caladium esculentum*, under a paper hay-cap, came

through all right, as did also Rose Geranium stumps and stumps of Lantana. *Erythrina crista Galli*, with a mound of sawdust over the stump and the protection of a paper hay-cap, would certainly come through an eastern New York winter, and these old undisturbed stumps make a wonderful growth and bloom in summer.

Tall paper hay-caps of a conical form, made especially for plant-protection, would afford excellent shelter for the dwarf sorts of Tea Roses, and they could be safely wintered under them in the winter when these plants are tender. The caps would also be useful to protect garden-plants from sudden cold in early spring. The amount of cold these thick waterproof manilla covers will keep out is surprising. I do not know how long they will last, but the paper caps I have used during two winters are uninjured. They could be made of any required height and size and sold in nests.

Raleigh, N. C.

W. F. Massey.

Tuberous Begonias as Bedding-plants.

SUCH marked improvement has been made in the quality of tuberous Begonias during recent years, and they are grown in such large quantity, that good tubers of the best strains are now as cheap as ordinary Zonal Pelargoniums. From seed sown late in January we can have by the end of May good flowering plants which will make a fine show when bedded out. Dormant tubers, if they are not already started, should at once be placed in boxes of light sandy soil and barely covered. They should be watered sparingly until growths appear, for too much moisture will cause some of the tubers to rot. When the plants are nicely started they may be potted off or planted out close to the glass in a frame. We find that better plants are obtained in this way, and as these Begonias are easily lifted they sustain but a slight check when bedded out. In this latitude we set them out by the end of May in beds which have been heavily manured in the fall, as the Begonia needs strong feeding. They are happiest in a light, rich and moist soil.

Many attempts have been made to grow these plants in full sunshine, but this is rarely satisfactory, since few moisture-loving plants are comfortable when baking under the mid-summer sky. I have always had the best success with them in beds partially shaded by trees during the hottest part of the day, but last summer some of our plants did grow well in the full sun. It is useless to hope for the best flowers unless the plants are kept well-watered. Our beds receive a thorough soaking three times a week during the warmest part of the year. Mulching with finely decomposed manure is beneficial. The plants will root up into this, and more than one coating can be given with safety during the growing season. When they are well advanced it is advisable to give some support to the main stem, or such tornadoes as the one which swept over this region in August last year snap off their succulent stems. After the plants are cut down by frost we remove a part of the stem and spread the roots on a shelf in a dry shed, and the tubers, after the stems have been separated from them, are placed in boxes of dry sand in the cellar where the temperature is little above freezing, where they keep in good condition until time for starting again.

These Begonias have been superseding Geraniums in Great Britain as bedding-plants for several years. Last summer was exceptionally warm, but from friends who grow them by the thousand in that country I learned that they were superb. One of my correspondents stated that they could endure all the sun that ever shone in that country if they were kept moist enough at the root. In comparing Pelargoniums with Begonias, we may say, in favor of the latter, that they can be more easily stored in winter; that they are covered with bloom until the frost cuts them; that the flowers of a good strain will average from four to six inches across; that after a heavy rain-storm, when Pelargoniums are dashed to pieces, they look as fresh as ever.

Taunton, Mass.

W. N. Craig.

Ferraria atrata.

IN 1870 I received a few bulbs of *Ferraria undulata* from E. H. Krelage, and have cultivated them ever since. During all this time I have seen but one flower, and am considering whether to try them any longer. This unsatisfactory experience had caused me to look askance at the whole genus, but accident has changed my mind. A few years ago I obtained a quantity of bulbs, not cultivated, directly from the Cape of Good Hope; these were supposed to be *Gladioli*, *Homerias*, *Galaxias*, *Tritonias* and *Ixias*, and were labeled as such. Taken in a wild state, they were encased in very dense and thick en-

velopes, the remains of several years' growth, so that the different kinds of bulbs were about identical in outer appearance.

The bulbs were relieved of their old husks and planted, and in the course of time dried off without flowering the first year. When removed from the pots they had more than doubled in size, and I found that there were two kinds in some of the pots. The intruders, being evidently of the same species, were potted separately, and when again turned out, still without flowering, were found to be larger than was natural for any bulbs of the species I had ordered, the largest being as large as an English walnut or Madeira nut. They were of a dark red color, irregular in shape, and much resembled pebbles in their general appearance. I had never seen any bulbs like them, excepting those of *Ferraria undulata*, which, however, are much smaller. Had I thought of the likeness at the time, I should, no doubt, have thrown them away. Last winter, having attained a flowering size, they blossomed profusely, and this year again they are in full flower. As soon as I saw the blossoms I saw that I had a new species of *Ferraria*, one, this time, as free-flowering as *F. undulata* is shy.

By the help of Mr. Baker's monograph I have identified the species as *F. atrata*. The leaves are narrow, thick, and of a darker green than is common in those of Cape bulbs. They curve outward and overtop the flower-stalk by an inch or two. The latter are about fifteen inches high and branch freely, the branches being short, and all terminating in flower-spathes, as does also the main stalk. These spathes are produced also along the sides of all of the branches, and are about two and one-half inches long, bright green, with a nearly white edge, and much inflated.

Even without a flower the plant, with its spathe-laden stalk, has a very unusual and attractive appearance. The blossoms, like those of the nearly allied *Tigridias* and *Rigidellas*, are individually short-lived, but are produced successively for some time from the same sheath. They have a diameter of about two inches, and consist of six triangular segments of a deep crimson color, and "trimmed," so to speak, with a curious edging which looks like olive-colored chenille. The anthers, arranged in three pairs, are orange in hue and conspicuous, and the pistil resembles a dense bush with yellow-tipped wings. The flower has a fragrance as odd as its appearance. Some consider it to be like vanilla, but the resemblance is not apparent to me. There is nothing in particular to say about the cultivation of the plant; the treatment usually given to Cape bulbs suffices.

Take it all in all, the plant is well worth the space it occupies, and I shall now proceed to get as many of the species of *Ferraria* as I can find.

Since writing this notice I have learned, by the blowing open of the greenhouse door in the night that this *Ferraria* is killed by an amount of cold which has no effect upon *Tritonias*, *Ixias*, *Oxalis*, *Sparaxis* and *Babianias*.

Canton, Mass.

W. E. Endicott.

Tecophilea cyanocrocus, the Chilian Crocus, is a charming little gem of the purest, deepest gentian-blue. The flowers are borne on short scapes, and the six petals form an erect, partly spreading flower about two inches long, dark blue, with white markings at the base. Herr Leichtlin has, I believe, developed other forms with more white in the petals. It is difficult to see how the typical form could be improved. It is of a rare color in flowers, and much easier than a Gentian to establish. I regret not having tried these bulbs before, especially as they seem likely to prove hardy here. On that point there may possibly be some doubt, though this season they took their chances on a south border among Irises of the *Reticulata* group, and seem to have suffered not at all either in foliage or flower from hard frosts. It will probably be prudent to keep the bulbs thoroughly dry through the summer, lifting them if necessary. *T. cyanocrocus* is not a recent introduction, but is still scarce enough to be classed among those bulbs with which growers do not care to try hazardous experiments, and hence its extent of hardiness is not fully known. In Nicholson's *Dictionary of Gardening* it is rated as a greenhouse bulb.

Iris Sindjarensis, now in flower, is a bulbous Iris from Mesopotamia. It is botanically one of the Juno Irises, of which *I. Persica* and *I. Caucasica* are the best-known representatives. The leaves are lance-shaped, channeled, bright green, and stem-clasping. The flowers, which are borne in pairs, are of a slaty lilac on the styles, shading to a faint tinge of lilac on the falls, which are slightly dotted greenish blue. There is a slight trace of yellow on the ridge of the fall. This species of Iris is perfectly hardy with me on an exposed border. Professor Foster notes that it does not "spear" with him till the winter frosts are over. My specimen, for which I am indebted

to Max Leichtlin, appears above ground in November, and has not been injured by freezing. It is either a very shy-flowering or deliberate plant, as it now flowers for the first time, having been planted three years ago, at which time the bulb was apparently a strong one. *I. orchioides*, which is of the same family, is also in flower, and is similar in habit and foliage to the first-named species. It has bright yellow flowers, with a small blotch of brown on the fall. Unlike those of *I. Sindjarenensis*, the flowers spring from the axils of the leaves.

Elizabeth, N. J.

J. N. G.

Petunias.—A new strain of Petunias, said to have been originated in California, has proved very satisfactory with me. The seedsmen are selling them under different names, Giant of California being the name under which I bought them. I know of nothing among our more familiar flowers that better illustrates the power of selection. These flowers are four to five inches across, and of the most intense and brilliant hues. They are so far from coarseness that I think them decidedly more delicate in appearance than the older sorts. The plant is more woody and the foliage is not as fine. The flowers are often fringed and ruffled on the edges, some of them self-colored, but usually veined or splashed or striped with vivid markings. The substance of the petal is very heavy and thick, and the flowers emit a delightful perfume.

Clinton, N. Y.

E. P. P.

The Chinese Wistaria.—This is a rampant grower, and will easily cover a thousand square feet in a few years. It has a decided tendency to produce an overplus of long, smooth, flowerless canes. In young specimens these should be selected with care, with a view to the proper distribution of the plant's energies in later years. Flowering wood may always be known by its short-jointed, stag-horn-like growth, absence of climbing spines, a conspicuous development of flower-buds and darker-colored bark. I am particular to make this distinction, as several amateur acquaintances of mine have been cutting away each year the "scrubby" growth and leaving the "good strong shoots," and then wondering why their vines do not bloom.

Wellesley, Mass.

T. D. Hatfield.

Correspondence.

Hedges for Cold Climates.

To the Editor of GARDEN AND FOREST:

Sir,—I wish to make some inquiries about plants for an ornamental hedge about a formal flower-garden in Berkshire, Massachusetts. We have tried California Privet, which, so far as appearance goes, is very desirable, but on our exposed terrace it was winter-killed after three seasons. Is the Japanese Privet hardy? Is not Hemlock too coarse for a hedge about a garden within a garden, so to speak? Would you advise the Siberian Thuya, which is yellowish-green in color? Many plants which pass the winter here in safety seem to be overcome by the freezing nights and hot noon-day sun of March.

New York.

C. S. C.

[Several species of Privet, or *Ligustrum*, can be grown to form first-rate hedges, but in a climate like that of Berkshire, Massachusetts, probably the common Privet, *Ligustrum vulgare*, would be the most reliable in point of hardiness. *Ligustrum Ibot*, from northern Asia, would doubtless be hardy, and it will probably prove useful for hedges, but its adaptability for this purpose has not as yet been tested. The Chinese and Japanese *Ligustrum ovalifolium* is hardy in the vicinity of Boston, and is very largely used for hedges about Newport and other places, but it is probably not hardy enough to make a reliable hedge-plant in the Berkshire region. It is a much handsomer species than the common Privet, and is commonly sold by nurserymen under the name of Californian Privet. All the Privets have white flowers, but when clipped as hedges few blossoms are produced. They make excellent hedges, bear pruning or clipping remarkably well, and in this climate they have the merit of holding their leaves until very late in the autumn.

For stronger deciduous hedges Beech, Honey Locust or Buckthorn will be found to answer well, and be quite hardy in western Massachusetts. Barberry will make a very pretty, though not very tall, hedge, and several other deciduous shrubs may be used. The Japan Quince serves

the purpose admirably in the latitude of New York, but it can hardly be trusted to endure the winters of western Massachusetts. *Spiraea Thunbergii* would probably serve as a low hedge.

Among evergreens, Hemlock, Norway and White Spruce and Arbor-vitæ make excellent hedges, and prove quite hardy in regions where the winters are very rigorous. Hemlock makes the more beautiful, Norway Spruce the more rigid and impassable hedge. The American Arbor-vitæ is now cultivated in many forms, produced by selection and artificial propagation. They vary in coloration, in compactness and density of foliage and branches and in the size and habit of the plants. These so-called varieties are adapted for hedges or borders a foot or two high, or for hedges or screens up to ten feet or more in height. The evergreen sold by nurserymen as Siberian Thuja, or Siberian Arbor-vitæ, also as Thuja Tatarica and Thuja Sibirica, generally proves to be simply a fine form of our common Arbor-vitæ, *Thuja occidentalis*, which was originally sold as *T. occidentalis*, Wareana. It has darker foliage, and in some other respects it is considered superior to many of the forms on the lists for making hedges and screens.

In trimming or clipping hedges of Hemlock, Spruce or Arbor-vitæ into formal shape they should be cut with the sides sloping up to the apex, so as to be wider at the bottom than the top. Thus the lower branches will get more light and air than they would if the sides of the hedge were perpendicular, and they will not be so likely to lose their leaves and die.—Ed.]

Late Frosts in the South-west.

To the Editor of GARDEN AND FOREST:

Sir,—Spring in the southern Ozarks is a particularly exasperating season. Apparently it is early, and so seductive are the south-land zephyrs and genial sunshine that each year we disregard our former experiences and believe that summer has come. Then the northern gales sweep down upon us with frosts, and possibly sleet in their train, and all our flowers are seared and ruined. Too often our flattering prospects of an abundant fruit-crop are swept away in a night. Each year has these trying fluctuations, but this spring has presented the most marked extremes ever known to the oldest inhabitant. After a month of almost summer weather, March went out in snow, hail, sleet and severe freezing. The damage done to fruit alone is incalculable, many trees being killed outright.

Our shade and fruit trees, ornamental shrubbery and miscellaneous planting suffered severely. Yet, now that fair, sunny weather is once more here, we find the damage to our ornamental planting much less than we had supposed, and in less than a week after the great storm our grounds are bright with bud and bloom. This is the result of precaution, not of chance. In view of our uncertain springs, we have long since settled on a course of action, which, in brief, is this: (1) Early blooming shrubs and vines, whose large size makes all outer covering inexpedient, are planted at the north and east part of our grounds, so as to be sheltered from the south wind by buildings as much as possible. This makes the flower-buds swell at least two weeks later than they otherwise would, and, in most seasons, insures safety from injury by late frosts. (2) Early spring bulbs and perennials are given the advantage of every sunny slope or southern exposure, to facilitate early maturity. The earlier sorts are generally well out of the way before the reactionary equinoctial and Easter storms make their appearance, while the medium and later spring sorts can be covered, even if in full bloom, should a cold wave be upon us, and so escape destruction. We always keep on hand a liberal supply of old carpets, gunny sacks, etc., ready to cover our flower-beds at a moment's notice. Besides this, our beds are always given a heavy mulching in the late fall, and, blanketed both at root and top, are able to endure severe cold.

We who live in an intermediate latitude, between north and south, must expect many rapid alternations of heat and cold. To escape injury to our spring and early summer display of flowers, we must retard premature vegetation in the spring, or else afford ample protection during severe weather. I can illustrate the value of this advice from our own experience.

First as to retardation: For seven years we had in our south

shrubby two Tree Pæonies which never bloomed, and one of the newer Lilacs, which never bloomed but once in all that time. Each spring the flower-buds swelled early in the season, only to be killed in late March by the usual cold wave. At last we had careful workmen transplant the three shrubs into the north shrubbery, and have had no trouble since. The buds start late and swell slowly, so that they pass the dangerous period in safety.

And, secondly, in the way of protection: During the excessively warm weather of early and middle March, not only were spring plants in bloom, but early summer plants were well advanced. Pæonies, Lilies, late Daffodils, Iris Germanica and I. Kämpferi, Clematis, etc., had made much growth, and some of them were even budded. Then came the phenomenal cold of late March. We could not see the promise of two months' beauty swept away in a single night, and the whole household was summoned to the rescue. When the regular supply of sacks, blankets and sheets fell short we supplemented them by anything that could cover a plant or group of plants—tubs, buckets, boxes, flower-pots, tin pans, etc.—and left them undisturbed over our plants the three or four days that the cold weather lasted. No doubt, the singular decoration of our home-acre excited some mirthful comment, but not a plant or flower was lost that was covered, while a few Irises and Lilies that were overlooked were frozen to pulp.

Pineville, Mo.

Lora S. La Mance.

Snow in April.

To the Editor of GARDEN AND FOREST:

Sir,—The frosts and snows of late March and early April have devastated the gardens hereabout, as vegetation was so unusually forward. Cherries and Plums were in full bloom late in March when the sudden freeze came, and Peach-trees showed rich color. Every bud and blossom on all these trees were blackened, and we will have to wait for another spring to see them again in perfection. Apple-trees were not yet in bloom and are not so much injured. Of the shrubs in bloom, the flowers of the Japan Quince were spoiled, but the fragile-looking Spiræa Thunbergii was little damaged. It was a strange sight to see its tiny blossoms and green leaves peeping out of a weight of snow that bowed its slender branches to the ground. A large Blackheart Cherry also presented an unwonted spectacle, with its white flower clusters covered with balls of whiter snow, and the Forsythia-bushes were a charming study in white and yellow, as their bright flowers shone through their powdery covering. To-day, April 12th, the sun is shining at last and the snow is nearly gone, and we can almost find it in our hearts to forgive April for playing us such a trick for the sake of the novel beauty of the spectacle.

Shepherdstown, W. Va.

Danske Dandridge.

Orchids at North Easton.

To the Editor of GARDEN AND FOREST:

Sir,—Among the Old World Orchids, Dendrobiums make an interesting group. Some are very dwarf, with short pseudobulbs like *D. Jenkensis*, while others like *D. Dalhousianum* form noble specimens, four to five feet in height. They generally bloom on the well-ripened deciduous stems, sometimes the growth of the previous year and sometimes of the current year, while it is no uncommon thing to see the well-known *D. nobile* blooming on the bulbs of two seasons' growth. The blooming season of the majority is in early spring and summer, but there is no season of the year at which some one or other will not be in bloom in Langwater gardens. From an ornamental aspect some of the species are very effective.

Dendrobium euosmum leucopterum, a very rare and beautiful hybrid, is one of three seedlings from the same seed-capsule. It combines in a wonderful way all the best qualities of its parents, *D. endocharis* and *D. nobile*, and even of some of its remoter ancestors. *D. endocharis* is itself a hybrid between *D. Japonicum* and *D. aureum*. From *D. endocharis* we trace the white and magenta markings in the disk and lip. The primrose perfume may be traced to *D. aureum*, while from *D. nobile* comes the size and form of the flower characteristic of that fine species. It is more robust than *D. endocharis*, but dwarfer than *D. nobile*. From an ornamental point of view the plant is superb. The fine variety *Burfordense*, or *Arnoldianum*, of *D. nobile* has for its distinctive feature the maroon blotch, so common in the type, marking the basal half of the two lower sepals, as well as the lip.

The variety of *Dendrobium splendidissimum*, named in honor of Mr. Robinson, the gardener here, is of the same parentage as *D. Leechianum*, *D. splendidissimum* and *D.*

Ainsworthii. The general form is that of *D. splendidissimum*; the petals, however, are white, suffused with rose; the disk of lip more nearly approaching that of *D. Ainsworthii* in color, which is claret, but it is larger and brighter than in that beautiful hybrid.

Epidendrum O'Brienianum is a handsome vermilion-crimson hybrid between *E. evectum* and *E. radicans*, with the fringed crest peculiar to *E. evectum*. The plant is a tall and ungainly grower, but no words can describe the beautiful effect of the color of its flowers.

Cattleya Patinii alba is a recent introduction from Guatemala, and very similar in habit and form of flower to *C. Skinneri alba*. There is, however, no dark disk, and, with the exception of a pale lemon tint on the crest, it is pure white.

Odontoglossum crispum, var. *Wellsianum*, is one of the most gorgeous varieties in existence, and very rare. The spike is large, covered with closely set flowers of the largest size. Petals broad at base, completely closing the circle, making a full round flower. The ground color of the sepals is pink, with a large irregularly oblong brown blotch on the dorsal sepal, and one or more blotches of the same color on the basal sepal. Petals pure white. There is an oblong brown blotch on the centre of the lip. The keel and crest are pure golden yellow, and the column beautifully marked and spotted with brown and pink. The whole plant makes a striking effect as a specimen. *O. Leeanum* is a unique natural hybrid. The ground color of the flower is primrose-yellow, with brown spots. It is very rare.

Odontoglossum roseum is a dwarf, compact plant, carrying graceful spikes a foot long, with as many as twenty flowers closely set and of a uniform carmine color, except on the column, which is white. The flowers are an inch across, and altogether the plant makes a very effective specimen.

Wellesley, Mass.

T. D. Hatfield.

Recent Publications.

Our Native Birds of Song and Beauty. By Henry Nehrling. With thirty-six colored plates after water-color paintings by Professor Robert Ridgway, Professor A. Goering and Gustav Meutzel. Vol. I. George Brumder, Milwaukee.

We have from time to time made brief mention of the successive parts of this work as they appeared, and commended them not only for their value in giving the scientific descriptions of our numerous birds, with graphic sketches of their daily lives and habits, but because they contained a very considerable amount of substantial information about our trees and plants skillfully and helpfully mingled with the bird lore. The entire work is to be completed in two volumes, and now that the first volume has appeared in tasteful binding we take great pleasure in commending it to every one who is interested in natural history or who takes any intelligent delight in the woods and fields. The plates are well colored and the figures are drawn with much spirit, while the typical vegetation with which they are surrounded is always full of accurate suggestion. The introduction, which treats of the migration of birds, their utility, their enemies, the best ways of protecting them, and many other general subjects of this sort, is entertainingly written, and contains the latest views and experience of the best authorities. The volume contains eighteen plates with portraits of sixty-eight different species, and the descriptions are popular, in the best sense of the word. By this we do not mean that they are not scientifically accurate and that they contain no technical details, for a certain amount of technical language is an absolute necessity in a work of this sort if it is to have any serious value for students. But it is not a book addressed to ornithologists alone; it is not loaded with the history of synonyms; it does more than present to our notice birds as mounted skeletons or as stuffed specimens. In short, it introduces us to birds that are alive in living woods and thickets. We see the robin with his plumage stained with poke-berry juice; the mocking-bird singing from a Magnolia draped with Spanish moss; the creeping warbler building his nest under a Fern-frond; the bluebird gallantly attacking the trespasser upon his home, and the brown thrasher flitting through a road-side thicket. The book is not a compendium of what other people have

found out about birds, but an account of them by one who has watched them with his own eyes, and who, without any effort to be sentimental, invests the subject with that subtle and poetic charm which appeals to every true lover of nature. The author is evidently inspired by his subject, but he never allows his enthusiasm to carry him into mere rhapsody, and always remains judicious and self-controlled. In other words, the book is genuine, and therefore fresh and fascinating, but never exaggerated or untrustworthy.

Notes.

Professor Sturges, mycologist of the Connecticut Experiment Station, has just published a Provisional Bibliography of the more important works published by the United States Department of Agriculture and the agricultural experiment stations, from the year 1886 to 1893, inclusive, on fungous and bacterial diseases of economic plants.

Some twelve years ago an English importation of bulbs from Asia Minor included one which, when it flowered, gave every evidence of being a natural hybrid between *Scilla bifolia* and *Chionodoxa Lucilæ*. It bears deep blue flowers in racemes, on a peduncle about six inches high, and they open a little later than either the *Squill* or *Chionodoxa*, which are supposed to be its parents. It has received the name of *Chionodoxa scilloides*. The plant is very interesting, not only from its supposed parentage, but because of its beauty and the desirability of having as many forms of early and hardy bulbous plants in our gardens as possible.

The interesting *Eulophiella Elizabethæ*, which was brought to Europe rather more than a year ago from Madagascar, and received a good deal of advertising on account of the marvelous way in which it was mixed up with wild beasts and princesses, in a romantic tale told by its collector, has been blooming in England. According to the *Orchid Review*, the flowers are over an inch and a half across, waxy white, tinged on the back of the segments with reddish pink. The disk of the lip is deep yellow, while its base and the column are marked with orange. The racemes and the bracts are said to be a deep reddish purple. It grows freely hanging in a warm, moist house, and ought to be a popular favorite.

A writer in the *Gardeners' Chronicle* speaks of the beauty of the Dog-tooth Violets which have just been coming into bloom in the rockery and other parts of the grounds in Kew. They have been planted there very freely during recent years, and have proved excellent plants as a carpet among groups of shrubbery. These plants could be used much more often to advantage in our own gardens, where the common European variety, *Erythronium Dens-Canis*, seems quite as hardy as our own neat little *E. Americanum* and the larger-flowered *E. grandiflorum* of our western states, with its varieties. No doubt, other species of our north-west, like the beautiful *E. Hendersoni*, of Oregon, might prove hardy here. Many of them could be naturalized among shrubbery and along wood walks with admirable effect.

Experience has shown that the season is not so short in South Dakota but that Tomatoes can be grown in the open air, although between the frosts of spring and autumn last year but 108 days intervened, while Tomatoes need about 140 days to produce a crop from seed. Of course, the plants have to be started indoors, and at the station in Brookings it has been shown that for ordinary purposes nothing is gained by sowing seeds before the 1st of March. A trial with seeds from green fruits gave larger fruits and a greater weight per plant than with seed normally ripened. Plants from cuttings proved decidedly earlier and more productive than plants from seed. It was found also that where the plants were cut back to make them shorter-stemmed and more stocky the fruit matured more slowly.

From a letter received from Mr. Joseph Meehan, of Germantown, we find that the Yellow Jasmine, *Cornus mas*, *Magnolia stellata* and *Daphne Mezereum* were about past their flowering more than a week ago. About the same time the flowers of *Magnolia conspicua*, *Andromeda Japonica* and *Rhus aromatica* were in good condition. Since then we have had another snow-storm, but Mr. Meehan writes that *Lonicera fragrantissima* is still covered with its creamy white blossoms, although it has been in flower for a month, while the native Spice-bush, *Lindera Benzoin*, is also displaying its yellow blossoms. The Almond, Apricot and Nectarine have flowered successively in the order named, while Peaches are just opening their blossoms

with those of *Spiræa Thunbergii* and *Corylopsis spicata*. In Boston, on the contrary, neither *Rhus aromatica* nor any of the *Andromedas* or *Magnolias* or the *Corylopsis* are yet in flower. Such differences in the seasons between the middle and New England states illustrate the difficulties of making any calendar of garden operations which is adapted to any considerable portion of this big country.

The nearest approach to a novelty in market flowers last week was Moss Roses, offered at seventy-five cents for a spray about six inches long containing a half-open bud and perhaps two or three smaller buds. They were very pretty, but even at such a retail price as this the grower would not realize very much, and we apprehend that they only commanded this figure on account of their scarcity. We observe, also, a rather free offer of *Anthuriums* for use in decorations where a flash of crimson is needed. Apple-blossoms from the vicinity of Washington cost fifteen dollars for a big armful of the branches, and small nosegays of trailing *Arbutus* are twenty-five cents each. One can hardly suppress a sentiment of pity on seeing the latter flowers for sale on the streets, as every cluster sold here means the loss of so much beauty in the woods, where they properly belong, and from which there seems danger that they will ultimately be exterminated. Ten-weeks stocks bring seventy-five cents for six spikes. Cut-flower dealers, as a rule, represent that their business is extremely dull.

Professor Goessmann, of Amherst, has been studying special fertilization with reference to garden crops. Of course, such crops need a soil rich in available plant-food because of their short period of growth. An excessive accumulation of half-decayed vegetable matter, such as stable-manure and compost from the refuse material of the garden, is objectionable, from the danger of parasitic growths, and although commercial fertilizers enable us to meet more directly the special wants of every soil, it is found that some garden vegetables, like Lettuce, are very sensitive to an excessive amount of soluble salines, and these, therefore, should be avoided. Of course, rotation of garden crops is to be commended, because they consume plant-food in different proportions, and in this way regulate the accumulation of the various essential constituents of plant-food in the soil. A mixture containing a proportion of twenty-four per cent. of potassium oxide, twelve per cent. of phosphoric acid, and twelve per cent. of nitrogen is recommended, while in the case of Cabbages, Turnips, Lettuce, Asparagus and some other plants, small quantities of nitrate of soda should be added at different times. In beginning the cultivation of garden vegetables and orchards on new lands the lower layers of soil should be plowed deeply and enriched with a supply of natural phosphates. Wherever there is a great accumulation of vegetable matter the application of burnt lime will assist in liberating the plant-food and favor beneficial bacterial life in the soil.

We occasionally see in fruit-shops in this city where West India products are sold a green oblong or pear-shaped fruit four or five inches long, with deep channels and a skin smooth, although it is sometimes covered with small, innocuous prickles, and when the solid flesh is cut through it shows one large seed. This is popularly known as the Chocho, and is the fruit of *Sechium edule*. Although it has never attained any popularity in this country, it is largely grown in tropical countries, and last autumn specimens were sent here from New Orleans, where its cultivation is said to be extending. The fruit plainly shows that the plant belongs to the Gourd family, and it is really a climbing perennial, with a root which is a large tuber sometimes weighing as much as twenty pounds and resembling a yam, both in appearance and in flavor when it is cooked. The fruit may be peeled, quartered, boiled and served like vegetable marrow, or it can be parboiled and baked under a joint of meat and served like potatoes. When cooked it resembles turnips somewhat in flavor, and it is also eaten raw as a salad. It should not be allowed to ripen before it is gathered, but should be picked green, as cucumbers are. Analysis shows that it contains four times as large a percentage of albuminoids as potatoes do, and it has about the same nutritive value as cabbage. In the West Indies it is considered very wholesome. The *Agricultural Gazette* of South Wales considers it among the most valuable of garden esculents and recommends it to every farmer in that climate for cultivation, since the fruit and tuber both make excellent food for animals. It is also a quick-growing climber, admirable for covering fences or training over trellis-work to hide unsightly objects. It is, too, a good honey plant. A single vine will bear thousands of fruits.

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A City Garden.

ONE of the famous small gardens of the world is attached to the dwelling of the Borsig family in Berlin, and an abstract of an account of it, recently published in *Gartenflora*, may be of service here, as showing what may be accomplished upon a small area under urban conditions, if wealth is aided by patience, intelligence and a real interest on the part of the owners.

The wealth of this family dates from the introduction of railways into Germany. In 1841 the first locomotive built in that country was finished in the shops of August Borsig, and when he died, in 1854, the five-hundredth locomotive of his manufacture had just been completed. About the year 1845 he purchased, in a suburb of Berlin, which has since become a part of the city, a modest dwelling-house and a very much-neglected and almost barren garden covering about thirteen acres of land. Intending it at first merely for a quiet summer retreat, he soon transformed it into a fine residence and made it his permanent home. Strack, one of the foremost architects of the day, built him a large but simple and dignified house; Lenné, the leading landscape-gardener of Germany, laid out his garden, and he himself designed the glass houses, using methods of iron construction which were then quite novel.

To perfect the garden as quickly as possible neither pains nor money was spared, and large old trees were transplanted, among them an Oak ten feet in circumference, which was brought a distance of 1,700 feet, and many of its neighbors were of almost equal size. A winter garden filled with flowering plants was supplemented by an immense Palm-house. In building and filling this house, Herr Borsig was helped by the botanist Von Warscewicz, and in return the engine-builder assisted him in the prosecution of his explorations in tropical lands. Professor Karsten further enriched this collection with some Tree-ferns which he had just brought home from tropical America.

In 1849 Herr Borsig built iron-works not far from his villa, and he was the first to conceive an idea, which has since been often imitated in this country and in Europe, of conveying waste hot-water from the factory to his garden-tanks, where tropical aquatics were grown in the open

air. As soon as Schomburgk had introduced the Victoria Regia it was planted in the Borsig garden, and there in a little temple-like greenhouse, specially devoted to it, the first flowers which it produced in Berlin unfolded during the summer of 1852.

It is not strange that such a collection of interesting plants, charmingly housed and grouped, should soon have become widely known, but in our restless times it is remarkable that this place, created fifty years since, should still preserve its beauty and importance. The work and the pleasure of his father were continued by Herr Albert Borsig, and now that he also is dead, his widow still tends the garden and villa with intelligence and love.

One of the additions to the riches of the garden made by the younger Borsig was the famous Hanbury collection of Orchids, which he bought entire in London for \$10,000. He also collected a large library of gardening literature, which embraces the collection of Eduard Haenel, famous in its day. His care for individual objects of interest is shown by the fact that when the Araucarias, which his father had planted, grew too tall to be protected by boards in winter, he built a covering of glass and iron which could easily be put together when the season required, and also could be extended at the top as the future growth of the trees might require.

Berlin has to-day a much longer list of attractive sights than it had in the time of the first Borsig; but the gardens which he established, and which his son improved, are still prominent attractions to natives and strangers, and the original owner's hospitality to visitors continues to be the family creed. Camellias have never gone out of fashion in Germany as they have in this country; and when the ranks of fine old Camellia-trees in the Winter-garden are loaded with flowers the stream of sight-seers is more constant than at any other time of the year.

Several instructive pictures of these gardens and green-houses are given with the article in *Gartenflora*; but specially interesting is the one which shows the way in which the loggia and the veranda are connected, and their relation to the house. The veranda lies against a portion of the back of the house, whence the gardens extend; it is wide and square, raised high above the ground to a level with the main floor of the house, and approached from one side by a flight of sixteen steps running parallel with the wall of the house. This flight is comparatively narrow at the top, but six steps from the bottom it broadens out to the full width of the veranda, thus supplying a sort of intermediate terrace. Here on either side of the upper steps, and backed against the base-wall of the veranda, are rich masses of flowering plants, uniting with vines, which clothe this wall and the veranda-posts, and they are profusely trained against the house itself. From the broad lower portion of the stairway rise four tall plain stone pedestals supporting statues which are copies of fine antique originals, and against the base of each of these pedestals is again a mass of flowering plants in pots. Ornamental iron-work forms the balustrades and posts of the veranda, and its roof seems to be of the same material. From the side of the back portion of the veranda the loggia stretches away at right angles to the house, and the heavy foliage of a great tree, which springs up behind it, unites the two structures, of different heights, into an harmonious whole.

The great interest of this picture is that it shows the advantage of bringing architectural and natural elements into integral relationship with each other. Too often in this country we build a house and plant a garden as though neither was concerned in the aspect of the other; and the result, of course, is a want of union and harmony destructive to the true beauty of both. Not many dwellers in our large cities can hope to have gardens as extensive as this one. But there are plenty of residences in our eastern towns, of the second class, where the grounds are as extensive, and where great architectural ambition is expressed in the house; and even the most costly houses in the prin-

principal streets of some of our great western cities (houses quite as costly as the Borsig villa) often have grounds which are large enough, if not for extensive horticultural effort, at least for effective artistic treatment. If more attention were given to the size, shape, position and architectural dignity of their porches or piazzas, if encircling blank walls were masked below with graceful loggias, as useful as they might be beautiful, and if planting were intelligently practiced, so as to connect the open portions of the grounds with their architectural environment, then we might often see in our cities the same kind of beauty which has been achieved in the Borsig villa, and a coherent design and an adaptation of features individually fine to the production of a general picture more charming than any of its details.

Moreover, American customs of summer life, often crowding the most costly houses together, with but small expanses of ground about them, dictate methods of garden-design which might often be more architectural, less "naturalistic" in idea. More dignity and regularity in the architectural adjuncts of the house, more system and symmetry in the disposition and planting of the grounds, and, above all, greater care in prescribing that similar ideas should control the design of house and of grounds, and that they should be integrally united, would work much improvement in the general aspect as well as in the individual beauties of such a place as Newport, for example. Too often now we see a fine, solidly built house fitted with porches and piazzas more proper to a rustic cottage; and, whether this be the case or not, the grounds are usually laid out in a would-be natural manner, suggestive of some really rural site and type of architecture.

It is not needful that such grounds, unless they are so small as to be scarcely more than door-yards, should be disposed throughout in a formal manner. The main portions of the Borsig grounds are naturalistically disposed and irregularly planted with groups of freely growing trees and shrubs. To-day they are rather too much overshadowed, looking as though tree-cutting had not been so systematically practiced as it would have been could Lenné himself have watched during these past fifty years over the development of his design. But, despite the somewhat untended aspect that such a lack of the highest landscape-gardening intelligence always gives a small pleasure-ground, the general air of this one is not inappropriate to the environment of even a stately city home; and this is simply because the transition from house to garden has been skillfully managed—because there is an intermediate space where architectural and natural elements are integrally combined.

Notes of Mexican Travel.—VIII.

ZAPOTLAN AND THE NEVADO OF COLIMA.

IT was the hour before dawn, on the 10th of May, when I climbed into the diligence for Zapotlan, standing in the court of the "Meson de Guadalupe," in Guadalajara. When all was in readiness, the link-men sprang back from the heads of our string of ten half-wild mules, and immediately these, rearing and plunging, dragged our ponderous coach crashing through the portal. The streets at this hour were deserted and dark, but as the coach rolled away toward the southern gate of the city they resounded with din and echo from wheels and hoofs on the rough pavement of cobble-stones. We felt relief when the wheels struck the gravel of the fields. A slight shower had fallen overnight, and a cool breeze was blowing, to mitigate the discomforts of heat and dust, which the accounts of friends who had been over the road a few days previously led us to expect. An hour after sunrise we halted in a little village to change mules. We have five relays of mules during the day. Near Santa Ana, thirty miles out, the road descends from low hills into a level valley stretching between ranges of low mountains as far as Sayula, where the coach stops for the night. Soon after leaving Santa

Ana we pass along the border of a reedy marsh, and notice a lovely *Crinum*, with pink and white fragrant flowers growing amid the reeds. Most of the way, however, the bottom of the valley is a saline sink, now perfectly dry and gray with incrustations of salt, and glimmering, in mirage, under the heat of the sun. About the sandy margins of the sink are straggling thickets of mesquite; outside of these, for a short distance, appear a few common Salt plants.

A prominent feature in the landscape about Sayula, which stands in fertile fields at the head of the valley, is a wild Fig, *Ficus fasciculata*, Watson. Its horizontal, far-reaching branches make it a remarkably flat-topped tree, and as it grows to immense size and lines the roadsides in the neighborhood of the city, the Fig avenues of Sayula are among the grandest of Mexican avenues.

In the early morning, because we are descending to more heated levels, we go on to Zapotlan with two relays of mules, first crossing a range of hills, then rolling through the deep dust of a valley. At Zapotlan the stage-road ends. Between this city and Colima, some sixty miles, lie lava-beds and deep barrancas, over which the traveler must pass in saddle. But I cared not to go on to Colima in a hurry. At Zapotlan I found myself in the midst of a charming region. The view on the north was bounded by the Sierra de Tapalpa, over which we had come. Close beside the town, on the east, runs a range of hills more or less completely covered with Pines. On all other sides of the town lies a rich valley, the lowest portion of which, on the north-west, is occupied by a lake some six miles broad. In the south-west rises the Nevado of Colima, its summit peak of bare rock, nearly 14,000 feet altitude and fifteen miles distant, overtopping Pine-clad ridges and spurs several miles in extent. Its twin peak, the Volcano of Colima, since it stands behind the Nevado, and is of less elevation, is not visible from Zapotlan. A few miles south of the city extend beds of lava discharged from craters on the edge of the valley, at the foot of the Nevado. Thus we find here the various elements of beauty in a landscape, and the diverse conditions to make a region of much botanical interest; and to make life in this sunny valley all the more agreeable, there were blowing over it daily, during the period of my stay—the hottest part of the year—fresh breezes from the sea and from the great mountain.

Waiting upon the chief magistrate with an official letter, on the afternoon of my arrival, I at once had a friend most courteous and kind, who found for my use a most eligible room in a house on the principal plaza (a house whose flat roof offered facilities for drying plants), and who made way for my roaming the region without hindrance or peril.

One of my first finds was the tree, *Ehretia cordifolia*, Rob., the most common and conspicuous tree of that valley. *Yucca Schottii*, common about the outskirts of the town and in roadside thickets, as well as among the lava-beds, was a striking plant, because then in full bloom, its white flowers being borne in panicles two or three feet high. It is an arborescent species, with many slender, erect branches. The hills and the lava-beds yielded me several novelties. But May here is the month of extreme aridity, and few plants were in growth or flower.

From the great Nevado, however, I hoped for better results, so, with haversack well filled, with canteen, port-folio and mackintosh, I set out one morning, tramped across the valley, entered a wide cleared cañon, and followed it up well into the flank of the mountain, where I found a ranch, to whose owner I had brought a letter. It was only for a trusty Indian guide that I asked, but the proprietor, with true Mexican courtesy, himself also accompanied me. It was three o'clock in the afternoon when we left his house and took a faint trail on the steep mountain-side, under heavy forests. It was nightfall when we gained the summit ridges and beheld the rocky peak still two miles away. A cold wind was sweeping over the mountain, and as our clothing was damp from

perspiration we were glad to find shelter in an unused hut of the ice-gatherers, formed of small poles neatly tied together, and covered, roof and sides, with a thatch of coarse grass. Two Indians had come before us to pass the night there, and had started a fire in the centre of the hut, so we all lay down together and passed the long night between sleeping and waking and keeping up the fire. When day dawned I was out in the frost, collecting on the spring-banks of a brook Senecio Tolucanus, D.C., var. modestus, Sch. Bip. After breakfast we started along a path leading to the peak, frightening, as we proceeded, groups of black cattle grazing the grassy openings of the mountain-top. Here were common great clumps of *Lupinus Mexicanus*, sometimes woody below and ten feet tall; *Pentstemon campanulatus*; *Euphorbia campestris* and *Crypsina stricta*, the largest of bunch Grasses. Here and there showed the scarlet of *Castilleja lithospermoides* or *C. tenuiflora*. On the mountain-crest beside the peak was found *Vaccinium geminiflorum*, H. B. K., then in flower; an occasional plant of *Draba Jorullensis*, H. B. K., in fruit, and an immature *Arenaria*, apparently. On the ledges was a prostrate *Juniper*, and this short list was all I noticed there. The sharp splintered peak appeared perilous to climb, and altogether uninviting to a collector. From a rocky knob beside it we looked off southward upon the volcano, a dry cone with rounded top, in which no crater was visible. It stood below our level and but two or three miles distant. Beyond the volcano and across valleys at its base, which were green with irrigated canefields, lay, in blue haze, serrated ranges, to hide the view of the coast-line.

Thus, the Nevado of Colima, which I had long anticipated exploring, proved disappointing, because less alpine in character than I had expected to find it. A scattered forest of the Montezuma Pine, one-third of its trunks dead and its branches whitening, reaches to the base of the summit rocks. All the summit is covered with volcanic ashes and scoria, which do not offer conditions favorable to plant-life. Though called the Nevado, or Snowy Peak, there was no snow on the mountain at the time of my visit. My guide assured me, however, that May is the only month in which snow is usually absent, since, in the season of rains, any storm which will fall in the form of rain below, may for a time whiten the upper peak with snow.

Turning back before midday, I collected *Arcanthobium robustum*, Engelm., a parasite abundant on the stunted Pines of the higher elevations, noted *Alnus acuminata*, *Salix lasiolepis*, *Arbutus varians*, and various Oaks mingling with the Pines from a little below the summit, lingered for an hour about the base to gather from Oak-trees specimens of another fine parasite, *Loranthus microphyllus*, H. B. K., and then pushing back to town with my back-load of specimens, reached home at the close of day. Could I have paid another visit to this mountain in August, as was my intention when I left it, and especially could I have explored certain wet ravines on its sides, somewhat better results would, doubtless, have been my reward; yet the sparseness of vegetation on the loose dry soil, and the absence of dead stems, plainly told of a meagre flora, and this estimate of the vegetation of the Nevado was confirmed by a later ascent upon its opposite side.

Charlotte, Vt.

C. G. Pringle.

Monœcious or Polygamous Poplars and Willows.

IN connection with the recent notice in GARDEN AND FOREST (p. 128) regarding the presence in this country of the staminate flowers of *Salix Babylonica*, it may be worth while to call attention to an occasional variation in the manner of flowering of some Willows, and sometimes of their near allies, the Poplars. Mr. Thomas Meehan has published in the *Proceedings of the Academy of Natural Sciences of Philadelphia for 1893*, p. 289, a note on a monœcious case of *Populus tremuloides*, in which distinctly male and female catkins were found separate, but on the same plant, while other catkins bore both stamens and

pistils on separate scales on the same catkin. Last season two wild plants of *Populus tremuloides* in the Arnold Arboretum were noted as bearing similar monœcious flowers, and herbarium specimens of these were preserved. The trees were small and growing on a dry, gravelly bank, and besides the monœcious flowers there were some which were apparently perfect. Both staminate and pistillate catkins occurred separately, and there were other catkins with both distinctly staminate and pistillate flowers intermixed on the same catkin. A good many flowers were each provided with an apparently well-developed pistil, which was accompanied by from one to half a dozen or more stamens. Sometimes the anthers of these flowers seemed imperfect; but in most cases they appeared quite normal, dehiscent regularly, and were well filled with their characteristic pollen. Occasionally a catkin was found with scarcely a dozen pistillate flowers, all the others being staminate. But in most cases the pistillate flowers were most numerous in the catkin. Sometimes the basal half of a catkin showed a tendency to bear almost purely staminate flowers, while on the terminal half they were nearly all pistillate, but generally they were intermixed. Fully one-third of all the catkins were purely staminate. On a pistillate tree, laden with catkins, a very few small belated male catkins were found. These plants were particularly observed on the 28th of April, by which time a large proportion of the male flowers had shed all their pollen. An examination of the same plants this season showed similar variations from the normal mode of flowering.

In vol. iii., 1878, page 51, of the *Botanical Gazette*, Mr. George E. Davenport records similar observations on this Poplar at Medford, Massachusetts. He also states that he was told by Professor Goodale that Mr. Bailey (presumably Professor W. W. Bailey) had found similar flowers on *Populus balsamifera* at Providence, Rhode Island.

In the note referred to, Mr. Meehan remarks: "Changes of sexual characters in dioecious plants are not uncommon, but have probably not been recorded before in connection with Salicaceous plants. The author has a large number of species of Willow growing on his grounds. All these were subsequently examined carefully, but no similar case of sexual change was found among them."

Monœcious cases among Willows, however, are not considered as very rare by those who have had occasion to carefully and frequently study these plants. Very often both male and female flowers are found on the same catkin; sometimes they are on different catkins on the same tree or shrub. There do not appear to be many published notes of such cases in this country, perhaps the most recent being by Mr. C. L. Anderson in *Zoe*, vol. i., 1890, page 41, which refers to a supposed hybrid between *Salix Babylonica* and *S. lasiandra* in California.

That monœcious or polygamous cases among Willows have long been known, is indicated by the fact that Linnaeus gave the name of *Salix hermaphroditica* to a species or form. In Host's celebrated monograph of *Salix*, published in Vienna in 1828, there are excellent figures of *S. mirabilis* (fig. 46) and of *S. montana* (fig. 73) exhibiting the deviations from the normal arrangement. These figures show both sexes on the same catkins or branches. Host also refers to the peculiarity in other species both in the monograph and in his *Flora Austriaca*, published in 1831. A reference to the monœcious habit in *S. Hoppeana* is made by Willdenow in the *Species Plantarum*, published in 1805; and Sir J. E. Smith, in the *English Flora* (vol. iv., 1828), mentions several species which bear both staminate and pistillate flowers on separate catkins on the same plants or in the same catkins.

There are numerous other references in the literature of European botany to this variation in the habit of flowering of the Willows. The subject is an interesting one to note, and any careful observer is liable to come across such examples when taking spring rambles where shrubby Willows are plentiful.

Arnold Arboretum.

J. G. Jack.

Plant Notes.

The Date Palm.

THE Date Palm, like the Coconut, must find a place with the half-dozen trees which are of most value to the human race. It is the type of *Phoenix*, a small genus of northern Africa, southeastern Africa and tropical Asia. The flower-spikes of all the plants of this genus grow from among the long pinnate leaves and bear unisexual flowers, the two sexes being produced on different individuals. The flowers have a cup-shaped, three-toothed calyx, a corolla of three petals, their edges valvate in the male and overlapping in the female flower. In the former there are usually six stamens with abbreviated filaments and narrow erect anthers; in the latter there are three distinct ovaries with sessile hooked stigmas. One of the ovaries only develops into a fruit, which is fleshy and one-seeded, that of *Phoenix dactylifera* being the date.

The Date Palm, whose port and general appearance is displayed in our illustration on page 165 of this issue, is a tree sometimes one hundred to one hundred and twenty feet in height, with a trunk covered with the persistent bases of the leaf-stalks and often surrounded at the foot by a dense mass of root-suckers. The trees flower in March and April, and as the male trees are generally less numerous than the females, the flowers of the latter are often fertilized artificially. In some parts of India and in Arabia this is done before the flower-sheaths expand, an opening being made in the sheath of the female inflorescence, into which a few pieces of the male panicle are inserted. The fruit ripens in the autumn; and through long cultivation a number of varieties, differing in the color, shape, taste and size of the fruit, have been developed in northern Africa and central Arabia, which is supposed to produce the best dates.

The home of this tree is believed to be the whole arid region from the eastern Canary Islands on the west, through the African Sahara, to the lower basin of the Euphrates. The Date Palm was thought by Brandis to have been introduced into India at the time of the first Mohammedan conquest of Sindh, in the commencement of the eighth century.

The Date Palm flourishes in the dry regions of northern Africa and western Asia, where it is exposed to excessive heat during the day and not infrequently to frost at night, although it cannot live without a certain amount of moisture in the soil. In Europe it is cultivated in Spain, where it was introduced by the Arabs and where it produces fruit, and on the Riviera in France and Italy, although it rarely fruits there. In southern Italy, Sicily and Greece, the Date Palm is now not uncommon, although the climate does not enable it to produce fruit of good quality. On the island of Delos, before Homer's time, Date Palms sacred to Apollo had been planted; in Syria and Palestine the cultivation of this tree is older than the earliest historical records; and on the southern shores of the Caspian it was also once largely cultivated. It is cultivated and now reproduces itself in Sindh, in the southern Punjab, and in the Indian trans-Indus territory. It does not, however, thrive in Bengal, where probably both the heat and rainfall are too great for it.

Not only does the fruit of the Date Palm supply millions of the human race and their beasts of burden with their chief article of food, but from its leaves the huts of many tribes are entirely constructed. The fibre which surrounds the base of the leaf-stalks is manufactured into ropes and coarse cloth, and from the leaf-stalks, crates, baskets, brooms and walking-sticks are made. The centre of the young leaves is eaten as a vegetable, and from the sap, to obtain which, however, the tree must be destroyed, an intoxicating beverage is prepared.

The wood of the Date Palm is rather light, but is used in house and bridge building, and for various other purposes, although the fruit-bearing trees are so valuable that only the males or trees past the productive age are cut for timber.

The soil and climate of many parts of southern California are well suited to develop the best qualities of this tree, and it is not improbable that the production of dates will soon become an important and profitable California industry. The Date Palm was first planted in California nearly a century ago by the Jesuit priests who came into the state from Mexico, and their trees may still be seen in the garden of their mission-house at San Diego; and as long ago as 1877 dates raised in California, and produced from trees which were only twenty years old, were exhibited in San Francisco. An account of the introduction of the Date Palm into California, with precise directions for its cultivation and requirements, will be found in the second edition of Wickson's excellent treatise on *California Fruits and How to Grow Them*.

The Date Palm is hardy in some parts of Florida and on the islands of the Georgia coast, and large plants may be seen in the gardens on Cumberland Island, where they have been growing for at least fifty years. The climate, however, of the south Atlantic states is so wet in summer that the Date Palm will never be cultivated in any part of them except for ornament or as a curiosity.

Foreign Correspondence.

London Letter.

NYMPHÆA PARKERIANA.—This is a white-flowered, very fragrant species, which was discovered in British Guiana by Mr. C. S. Parker, an amateur botanist and collector, in 1824, and was named in compliment to him by Lehmann in 1853. It has the habit and foliage of *N. odorata*; indeed, it was considered to be a form of that species until Lehmann named it as above. The flowers are nearly as large as those of *N. alba*, pure white, with bright yellow stamens and a sixteen to twenty rayed stigma. *N. Parkeriana* was cultivated at Kew at least ten years ago, and it was obtained from Kew by Mr. E. D. Sturtevant, of New Jersey, but without name. He flowered it, fell in love with it, and then lost it. The same fate befell it at Kew. Thanks, however, to Mr. Jenman, of Demerara, seeds of it have lately been secured and sent to Kew, and a portion of the seeds has been distributed. We are likely, therefore, to possess this species in abundance soon.

TECOMA SMITHII.—Some time ago I noted in one of my letters the introduction and flowering of this plant at Kew, where it has proved to be a first-rate, free-flowering, handsome little shrub for pot-culture in a cool house. In a note written for the *Gardeners' Chronicle* I appealed to Australian growers for the true history of the plant, as it had been sent to England from Melbourne, and was said to be a hybrid between *T. Capensis* and *T. velutina*, a variety of *T. stans*. Mr. W. R. Guilfoyle, Director of the Melbourne Botanic Garden, writes that the plant is certainly a hybrid between the two species named, and that with him it always comes quite true from seeds. He says: "Scores of seedlings have been raised from the plants in our botanic gardens, which, with the exception of a slight variation in the foliage, are exactly like the parent-plant. The flowers do not vary in the least degree. *T. Smithii* flowers for fully nine months in the year." It is remarkable that a plant raised from two well-marked species, and showing characters distinct from both, should come true from seeds.

The *Amateur Orchid Cultivator's Guide Book* is the title of a little work on a now well-worn but progressive subject, by a man who is a successful grower of Orchids, having charge of the fine collection owned by Mr. Chamberlain at Highbury, near Birmingham. The book is cheap (half a dollar), and it is good and practical as far as it goes, which is not much further than the amateur seeking for plain instructions would desire him to go. Mr. Burberry has had considerable practice, and his teaching, as set forth in his book, bears evidence of his all-round knowledge of garden Orchids. It also shows, unfortunately, evidences of hasty writing and proof-reading, and it will not bear looking into



Fig. 31.—The Date Palm in Egypt.—See page 164.

too closely by the stickler for correctness of nomenclature. These, however, are slight blemishes which any one can see or need not see. The instructions for the cultivator's guidance show no such defect.

MARKET-GARDENING IN THE SOUTH OF IRELAND.—The Irish Land Commission is endeavoring to encourage and develop market-gardening in the most favored counties in Ireland, especially Cork, Waterford and Kerry, where land is good,

the climate comparatively mild and labor cheap. There are good reasons for believing that Ireland could supply the less favored parts of the United Kingdom with a large proportion of the early fruits, vegetables and flowers which are now imported from the countries bordering the Mediterranean. The experiment is worth trying. I have seen some of the best gardens in the county of Cork, and their contents suggest a climate almost as mild as that enjoyed in the south of France. What Mr. Dorien Smith has done for the Scilly Isles in developing their land resources may, one would think, just as easily be done for south Ireland.

TREE-PRUNING.—The belief that trees when once stuck into the ground will look after themselves is so firmly established in this country that it will take a considerable number of editions of Monsieur Des Car's little book to eradicate the belief. It is poetical to declare that nature is the best gardener and forester, but practically it is utter nonsense. Trees, and especially exotics, generally grow awry if they are not looked after. Tree-pruning cannot, however, be done properly by an ignoramus; the character of the tree and the effect of pruning upon it must be comprehended by the practitioner, otherwise he will probably do much injury. I should like to show to those people who curse the pruning tools and those who preach pruning, a number of trees not far from Kew, which have grown into ugly cripples through neglect of the art of pruning, and, on the other side, young trees which are perfect in consequence of judicious pruning done in good time. Even large once-neglected specimens are hopeful after having undergone a severe course of lopping and pruning. A London publisher (Rider) has lately issued an edition of A. Des Car's excellent little *Treatise on Pruning Forest and Ornamental Trees*, which was translated by Professor Sargent some years ago, and is now recognized by all who know what a tree ought to be, as the most useful treatise on this subject. It has been received with gratitude by some authorities here and severely condemned by others. The value of the book cannot be gauged by one who has never tried the effect of careful pruning, but condemns all pruning because he has seen trees mutilated by so-called pruners. Some people cannot bear to see a tree cut; they look upon it as a species of cruelty. Others appear to have started a crusade against all art in the garden, except that which is called nature's art. Both kinds of objectors are hopeless.

London.

W. Watson.

Cultural Department.

Work in Glass Houses.

THE outdoor garden will now demand much attention, but it will not do to neglect the indoor department at this time, for spring is the recuperative season for most foliage-plants, and is also the most suitable time for propagating, potting and pruning this class of plants. For example, specimen Crotons and Ixoras, grown unshapely, should be corrected by severe pruning a few weeks before repotting, so as to allow the fresh growth to start before the roots are disturbed. Both of these plants are improved by hard pruning, provided they are treated liberally afterward as to heat and moisture. Syringing two or three times a day in bright weather helps the young growth.

The Ixoras grow best in a light soil. Some peat in the compost is an advantage; they can also take up a reasonable quantity of manure, in liquid form or mingled with the soil. The pruning of Crotons intended for outdoor bedding this summer should have been done some months ago, in order to secure a firm, strong growth on the plants before the time for planting out.

A few plants of *Clerodendron Balfourianum* of moderate size, trained on balloon-trellises, make admirable specimens for conservatory decoration during the summer and autumn. To secure full crops of bloom a period of rest is required after their growth is made; the plants should be in full light for some weeks, and kept without water, until all the foliage has dropped off. When the new growth is well ripened by this treatment the plant may be started again. Any worthless wood should be trimmed out and the long shoots neatly trained, beginning at the lower part of the trellis with a long shoot, and gradually training it around and upward; dormant shoots of

climbing plants should never be trained downward, as they do not thus break away freely. To start the plants a thorough soaking of water and frequent syringing is required, and a temperature of sixty-five degrees. A small quantity of guano or other good fertilizer proves beneficial when the shoots are about two inches in length.

Specimen *Allamandas* also thrive under the treatment indicated for *Clerodendron Balfourianum*; thorough ripening of the wood induces a much better crop of flowers than can be had if the plants are kept growing throughout the entire year. *Allamanda Williamsii* and *A. nerifolia* are excellent for small collections. These varieties furnish smaller plants than *A. Schottii* and *A. Hendersonii*; the flowers, also, are not as large, but they are so abundant as to make up for their smaller size.

Gesneras, *Gloxinias* and other flowering bulbs for summer decoration of the conservatory will also need attention. Most plants of this character are not improved by exposure to strong sunshine, and *Gloxinias* especially do not like water on their leaves, while they enjoy a liberal supply at the root and also a moist atmosphere.

The stock of *Ficus*, *Pandanus Veitchii*, *Aralias* and other foliage-plants should be increased now. The most shapely young plants of *Ficus elastica* are secured from top-cuttings, for while single-eye cuttings may be readily rooted at this season, they never produce as well-furnished plants as those from top-cuttings.

The best specimens of *Pandanus Veitchii* are grown from short, stocky cuttings, a drawn-up cutting usually retaining that characteristic in the future plant, besides taking longer to root. *Artocarpus Cannonii* is a highly ornamental member of the Breadfruit family and deserves a place among the stove foliage-plants; its dark, purplish leaves contrast well with some of the lighter, variegated plants; reasonably easy to propagate from cuttings, it should become much more popular.

Aphelandras will also require potting on before they are too much impoverished, or the foliage is apt to suffer before the flowers appear. I prefer, however, to have young plants of *Aphelandras* each season, rather than carry over old stock, for this is liable to become infested with scale, and it is difficult to clean them without bruising or scratching the foliage.

Holmesburg, Pa.

W. H. Taplin.

Spring Flowers.

MORISIA HYPOGAEA, flowering now in my cool annex, is a neat little alpine plant from the mountains of Sardinia. It forms dense tufts of bright green, narrow leaves two inches long, incised or cleft like Dandelion-leaves. The flowers, borne freely on very short stems, are bright clear deep yellow, and at this season the plant is most attractive. There is probably little doubt of its hardiness and usefulness for the rocky or alpine garden.

Fritillaria Yorii Barzali is one of Mr. Whittall's new finds, which as yet has only this provisional name. This little plant is only three inches high, but bears a large bell-shaped flower contracted at the opening. The flower is over an inch in diameter and deep clear yellow, brighter than that of *F. aurea*. It is marked in dots of rich red inside and out. The dwarf *Fritillarias* are interesting little plants for rockeries or choice borders, where the bulbs will not be likely to be disturbed and lost when they are resting. Mr. Orpet has lately called attention to *F. aurea* in not too high terms. *F. Meleagris*, the Snake's-head *Fritillary*, is the well-known checkered sort, and a great favorite in gardens. *F. tristis*, the Mourning *Fritillary*, is of the richest velvety brownish-black. It is just coming into flower. *F. Dalmatica*, also just opening, is a grayish-green flower marked with red, and is not very handsome. There are several forms of *F. Armena* in the garden, the prettiest one being of a dull wine-color, with cloudings of yellow. Our native yellow *Fritillaria*, *F. pudica*, is figured in the current *Meehans' Monthly* with a colored plate. *F. biflora* is a Californian species yet to flower, which appears to me a little gem. Its coloring is in the greens and reds of the exotic *Cypripediums*. It is, however, a very small flower. The other Californian species I have not seen. It is curious that the greater *Fritillary*, the Crown Imperial, should have been a favorite in gardens so many years.

Irises *Caucasica* is this week's addition to spring-blooming *Irises*, and planted near *I. orchioides* it emphasizes the fact that the flowers of this species are dull and washy and a mere attempt at yellow. These *Irises* are both of the same section, and seem to prosper under the same conditions of somewhat heavy soil and full exposure. *I. orchioides* is so much supe-

rior in its rich yellow, and so much more free in flower, that it is greatly the best garden-plant.

Anemone blanda has been very late in flowering this season, scarcely giving a sign till early March. It has sometimes shown color in the first week in January with me, and usually appears after the first few sunny days of the year. The beautiful star-like flowers, expanded over the bronzy, finely cut leaves, are among the most cheerful blossoms of the early year. Among them are pure whites and various shades of blues, or, properly, purples. The deep, pure-colored, Violet-blue form is usually most valued.

The winter Aconite, *Eranthis hyemalis*, has also been late this year, to the extent of not flowering at all. In fact, there seems but a bit of it left in the border. Perhaps this is a reliable flower in many places, but it is never happy with me, and rapidly disappears. The newer *E. Cilicica* appears, in less sunlight, to be making some progress, but has not flowered this season. Yellow flowers are so bright and cheerful that those which appear in the early year are especially valuable, and the winter Aconite could never be too plentiful in the border.

Other low-growing plants which are now in flower are *Aubrietia Leichtlinii*, *Arabis alpina*, hybrid Primroses and various Grape Hyacinths. The trailing plants of *Aubrietia* are so pretty and bright at this season that it is a pity that their flowers so soon fade in the sunlight. Hybrid Primroses have been, of course, in flower sparsely from the late fall, but at this season the clustered leaves are being gradually hidden under the charming flowers—that is, the flowers are charming if a careful selection has been made from the seedlings and the weak dull-colored ones are resolutely discarded.

Elizabeth, N. J.

J. N. Gerard.

Cannas.

FEW flowering plants combine so many good qualities as the modern French Canna. The introduction of Madame Crozy marked a decided advance and placed them among the most useful plants, either for the garden in summer or the greenhouse in winter. Several varieties planted out last spring had bloomed continuously during the previous winter without a rest or check of any kind, and continued to do so throughout the succeeding summer, increasing in size and vigor. When the autumn frost came they were potted and placed in the greenhouse again, and kept at a night temperature of fifty-five degrees, Fahrenheit. Here they have since made a magnificent display, without any abatement. No rest seems necessary for these Cannas, as was required by the older kinds. Madame Crozy is still, in my opinion, the best Canna of its color yet distributed for all purposes. Its general habit, free-blooming qualities and compact panicles of scarlet and gold flowers altogether make up a standard of excellence by which future introductions will surely be judged.

A clear yellow Canna with large flowers is still wanting, but this need will doubtless be filled. According to reports of the new Charles Henderson, its flowers will eclipse that superb crimson, Alphonse Bouvier. President Carnot has bloomed very freely all winter. It is one of the best dark-leaved varieties. The flowers are unusually large for this class and of a good salmon-red color. I have only one plant, but at no time during the winter has it been without some bloom, although dark-leaved varieties are generally considered shy bloomers. Among recent introductions no variety has attracted so much attention as Paul Marquant. The flowers are very large, of a salmon-red shade, with a pleasing satiny lustre. The habit is very dwarf and free, and it makes one of the best pot-plants, every shoot bearing flowers. Captain Suzzoni, light yellow, spotted, and Florence Vaughan, dark yellow, spotted, are with me of about equal value, and the best for outdoor planting of these shades. Souvenir de Francois Gaulin, of less recent introduction, of the yellow type, is the best winter-blooming variety of this class which I have found. The flowers are smaller and not quite so lustrous, but still effective when seen in quantity.

Wellesley, Mass.

T. D. H.

Begonias.

BEGONIAS are in general favor as winter-blooming plants for their grace, beauty and diversified character. We find it more practicable to raise a new stock every spring than to hold over old plants, which often become leggy. Cuttings made now will root freely. They should be grown along during the summer in under-sized pots, with a generous shift late in the autumn, for if grown to their limit from the start the plants become less compact and are larger than it is desirable

to have them. A good light compost, not very rich, suits them well. When the natural soil is heavy a little leaf-mold and sharp sand should be added.

I find that the most useful varieties are: *Incarnata*, a bushy plant with pink flowers. *Bismarck* is rather shrubby, tall, with clear pink flowers. It is a continuous bloomer from the cutting-bench onward. *Paul Bruant* has short, succulent stems and handsome foliage, and makes a good pot-plant about a foot high. The flowers are bright pink, the male flowers extremely fugacious, and the handsome female flowers persistent and arranged in drooping paniced cymes with green-winged capsules. *Verschaffeltii* is a rather coarse-growing hybrid with a thick, succulent stem. It is a seasonal bloomer, akin to *Manicata*, and is at its best in January. The erect branching cymes are often more than three feet long, a perfect mass of pearly-pink flowers, and it is a striking object in bloom; all the *Semperflorens* group are free bloomers. *Sutton's Perfection* is an extremely handsome white, and is a splendid bedder. Of the more or less ornamental-leaved varieties, *Crestneri*, *Olbia*, *Scharffiana*, *Argentea-guttata*, the variegated *Manicata*, *President Carnot* and *Madame De Lesseps* are all excellent.

Our old plants are pruned and used very effectively for odd shady corners, and some very nice work can be done with them. An attractive group of a sub-tropical character can be made with *Bismarck*, *Guttata*, *Metallica*, *Diadema* and two or three varieties of *Semperflorens*, including the yellow-leaved variety, some *Fuchsias*, notably the yellow-leaved *Wave of Life* and *Sun-ray*, with a few *Dracaenas* of either the *Draco*, *Australis* or *Fragrans* type, a few *Grevilleas* and *Abutilon Eclipse*.

Wellesley, Mass.

T. D. H.

Hydrangeas on single stems.—This is a useful way to grow Hydrangeas, and this is a good time to strike the cuttings. Strong young shoots, with no appearance of flower-buds on them, should be selected, and when rooted should be placed in three-inch pots and shifted on until they are in seven-inch pots. They must be kept growing freely all the time in a greenhouse temperature, and they do best in a mixture of two parts loam, one of leaf-mold and one of sand, with a little dried manure or ground bone added. All side shoots should be removed as they appear, and when the flower-buds are set the plants should be fed until the blooms are about half-expanded. The result should be nice, useful plants, from fourteen to eighteen inches high, with single flower-heads measuring, in many cases, over thirty inches across.

Azalea Indica.—These plants are now past flowering, and potting should be attended to at once if it has not already been done. They should be thoroughly cleaned before beginning to pot them, although this work may be done afterward. Thrip and red spider, the enemies of Azaleas, can be kept in check by occasional syringing with a solution of Fir-tree oil. Mealy bug and scale often lurk beneath the loose bark, which should be carefully scraped off with a small piece of wood or some substance not apt to injure the under bark. The pots, also, should be perfectly clean. The plants require to be well drained, and in shifting the roots of the plant should be disturbed as little as possible. *A. Indica* does best in a mixture of two parts fibrous peat, well broken, two parts leaf-mold and one of sand, the fresh soil packed firmly about the plant. With the house kept moderately warm and the atmosphere moist, growth will be encouraged, and gradually more air should be admitted, as the plants become established and started. A little training greatly increases the beauty of Azaleas, and if regularly attended to every season this work is but little trouble. Of many forms into which the plants can be trained, I like a half-ball the best, as this form shows more of the plant at one time. After the growths are made and the buds set, the plants should be plunged out-of-doors in a bed of ashes; the holes should be made large enough for pieces of brick to be placed in the bottom, to ensure free drainage.

New Dorp, N. Y.

William Scott.

Winter Apples.—Proportionally few of the seedling apples which appear from time to time are long keepers. It is a curious fact that, desirous as growers and consumers in all sections are for these late-maturing fruits, we have collected, from foreign and native sources together, considerably less than 200 varieties which can be classed as winter fruit in any part of the country, while the apples, otherwise valuable, which will keep until April south of New Jersey, hardly reach thirty named kinds. And yet the ready critics are loudly attacking the Russian Apples which have been imported within the past twenty years, because no large number of them have yet shown themselves to be all-winter fruit. It will require at

least a dozen years more to settle this question thoroughly; and, unless I am much mistaken, it will turn out that, in the section for which they are best adapted, these north European Apples will show as large a proportion of winter sorts as those which have been longer known. Meantime, it ought to be everywhere understood that valuable all-winter apples of any origin are in number relatively few, and are likely to remain so.

Growing Seedling Fruit-trees.—New varieties, some of marked merit among them, appear from time to time, mostly of chance growth; but there has been, in this country, very little systematic planting of the seeds of our tree-fruits with the object of securing improved sorts. Perhaps the chance growths do as much for us as systematic work would do, in our middle and southern sections. Certainly, it is to chance that we owe most of our leading native varieties. The number known to be otherwise produced is very small, with the exception, perhaps, of Pears and Cherries. In the "cold north," however, the good new varieties adapted to the rigors of the climate present themselves too slowly to satisfy the planter; and already there are a considerable number of experimenters in this line. The pioneer was Mr. Peter M. Gideon, of Minnesota, and his energy and perseverance have been well enough rewarded to encourage his successors to renewed and more systematic efforts. It is not a difficult matter to grow seedlings from the more promising "iron-clads," native and foreign, which at three or four years of age may be planted out along the fences and left to show what they can do. The more promising selections made from these can easily be given a better chance by grafting, and their good qualities determined from the result. This work is especially commended to our experiment stations, where, also, the more skilled work of crossing and hybridization can be followed to valuable results.

Newport, Vt.

T. H. Hoskins.

Correspondence.

Lilacs.

To the Editor of GARDEN AND FOREST:

Sir,—Will you be kind enough to name a dozen of the best Lilacs for shrub plantations?
Morristown, N. J. S.

[Most people who speak of Lilacs have in mind only the different varieties of the common garden Lilac, *Syringa vulgaris*, with, perhaps, the Persian and Chinese Lilacs, *S. Persica* and *S. Chinensis*. Nurserymen sell many forms of *S. vulgaris*, some of them double, but we know of none better than Charles X., one of the darkest; Philemon, a rich purple red, and Marie La Grange, a pure white. There are other good varieties named in the catalogues, and Monsieur Lemoine, of Nancy, has raised an interesting series of hybrids between different species. *S. oblata* is not a new species, but it is by no means common in gardens. In its botanical characters it is closely allied to the common Lilac, although it flowers ten or twelve days earlier than that species. We have often spoken of its thick leathery leaves, which remain on the bushes late in autumn and sometimes turn to fine colors, and of its freedom from mildews. The flowers resemble those of some forms of the common Lilac, although the species are easily distinguished by the form and texture of the leaves. The Persian Lilac is well known in old gardens as a graceful shrub, and the Chinese Lilac, which is rather larger and intermediate in form between *S. Persica* and *S. vulgaris*, is admirable in habit and altogether one of the most desirable of hardy shrubs. Both of these have forms with white as well as lilac-colored flowers. Their season of bloom is a little later than that of *S. vulgaris*.

There are several other Lilacs, however, nearly a dozen species altogether; some of these are first-rate garden-plants, and others which have not yet been cultivated. We have figured the best of these in GARDEN AND FOREST and called attention to their merits as they have flowered in the Arnold Arboretum. But new shrubs gain recognition slowly, and these Lilacs are planted very sparingly throughout the country. The seeds of *S. Japonica* were received in the Arnold Arboretum as long ago as 1876. The plant grows rapidly with a straight, tree-like trunk and upright branches. The older specimens are now considerably more than

twenty feet high, and are perhaps fifteen feet through. The immense cream-colored panicles of flowers from eighteen to twenty-four inches long, standing high above the foliage, make this tree a very conspicuous object when it is in flower in early July. *S. pubescens* flowers at the same time as the earliest varieties of *S. vulgaris*. The flowers are rose-colored, fading to white, and very fragrant. This is certainly one of the best hardy shrubs of recent introduction. *S. villosa* is a more robust plant than *S. pubescens*; it bears abundant flesh-colored, bad-smelling flowers, which appear in large, compact, shapely clusters after the common Lilacs have faded. The last two species have long tubes like *S. vulgaris*, *S. oblata*, *S. Chinensis* and *S. Persica*. The leaves are pale on the under surface, *S. Japonica* belongs to the section with very short and corolla tubes, and so do *S. Pekinensis*, a small tree of graceful habit of northern China, and *S. Amurensis*, of the Amoor country. These all produce ample clusters of creamy-white flowers, with the disagreeable odor of the flowers of the Privets.—Ed.]

The Untimely Frost.

To the Editor of GARDEN AND FOREST:

Sir,—The effect of the March freeze is more apparent on tender Roses than almost anything else, except the Grapes. Large Tea Rose-bushes that were loaded with buds when the freeze came, and which have stood unharmed for many winters, are dead to the ground. A large Banksia Rose on my piazza, covering a space fifteen by twenty feet, is dead. A Maréchal Niel, on the same piazza, loses much wood, while Gloire de Dijon, a little further along, on the same piazza, too, where the morning sun did not strike it, is little hurt. The Polyantha Roses are killed to the ground. My Figs, that I hurriedly bent to the ground and covered with soil, did not lose a leaf, and the young fruit is all right. Peaches are entirely lost, but I find many Plums still sound. Some good Apple-blossoms have come out since the freeze. Grape-vines lose nearly all of last year's wood and are breaking from dormant buds on old wood. This also occurred in 1890, but the shoots from the old wood made fruit. Some Rye that was heading is killed, and early Wheat and winter Oats look very sick. Winter Vetch that was knee-high is dead and brown, and the tops of Corn were cut down. The Oaks are still brown, with dead catkins and young leaves, and have not yet ventured to start again. All vegetables, even Peas and Cabbages, in our gardens were killed, and Onions look as though boiling water had been sprinkled on their tops.

Raleigh, N. C.

W. F. Massey.

Roses and Cannas at Tarrytown, New York.

To the Editor of GARDEN AND FOREST:

Sir,—Some four years ago, as the business of F. R. Pierson & Co. was rapidly outgrowing its limits in Tarrytown, the firm purchased a farm a few miles north of Tarrytown, near Scarborough, and began to erect a group of glass houses devoted to the growing of Roses for cut flowers. At the convention of the Society of American Florists in Montreal in 1891, Mr. Pierson read an essay which gave an elaborate description of his first houses, which had been constructed with an especial view to durability, since he had found that the expense for constant repairs was one of the most serious obstacles to commercial success. These houses, which were built by Messrs. Lord & Burnham, of Irvington, New York, seemed in many respects an improvement on anything of the kind hitherto erected, and their imperishable frame of rigid iron, from peak to foundation, was considered at the time a model.

A few days ago I visited the houses at Scarborough, and found that they had gradually increased, until, instead of four, there were now eight parallel houses facing the south, each more than three hundred feet long, making altogether a structure practically twenty-five hundred feet long and twenty feet wide. What interested me most was the fact that the original idea had developed in various directions until the last house, although in its essentials similar to the first, is manifestly as superior to the first as the first were to structures erected twenty years ago. So much has been written about these houses that there is no need to give a careful account of all their features. It must suffice to say that the houses are thirteen feet high at the ridge, with the long side of the roof toward the south. The "continuous rafters" are of wrought iron, half an inch by three inches in dimension, and joined together at the ridge by cast-

iron brackets. They are bent at the eaves, carried straight down and bolted rigidly to cast-iron posts which are set into excavations in the ground, and about each of which a barrel of concrete is packed, so that practically they are set in a solid block of stone. These rafters, which stand seven feet six inches apart, are tied together by purlins of angle iron—that is, strips of iron bent so as to form two sides of a parallelogram—which are respectively one and a half inches by two inches wide. They are bolted to the rafters to stiffen the frame and hold the cypress sash-bars which are fastened to them by screws. In the house which was completed last the sash-bars and glass extend beyond the wall some four inches, like the eaves of a shingle-roof, off of which the water runs freely, while the glass on the front wall fits up closely under the glass of the roof. There is no plate, no gutter, no supporting brackets and other woodwork to decay or obstruct the light, so that the front bench is not under a shadow as usual, but has full sunshine throughout. In the place of the ordinary plate is a light strip of angle-iron which ties the rafters together, and by means of which each sash-bar is fastened to an upright supporting bar in the front wall. In part of the house even this continuous strip of angle-iron is dispensed with, and the glass itself is trusted to give the necessary stiffness to this part of the structure. A light gas-pipe post supports the long south rafter at its centre.

The clear glass wall, which is thirty inches high in front, the lack of all obstruction to the light at the eaves, the high roof, and the general lightness of the frame-work all combine to give a sense of all-outdoors and abundance of light and air that I never experienced in any other building. Perfect air circulation is secured by a double line of ventilators consisting of thirty-inch sashes hung to the ridge, one on each side of the roof. In this way the house can be aired, whichever way the wind blows, without injurious draughts, and in the summer-time, when both lines are open, the benches are never overheated. Another thing which struck me as a singularly happy device was the construction of the benches. Upon iron posts supporting iron cross-pieces long strips of iron, with a cross-section like an inverted T, are laid longitudinally, and far enough apart to hold an ordinary brick. Common bricks are placed on these supports to form the bottom of the bed, so that there is nothing perishable about the bench except the upright board on the edge, which can be replaced without any trouble when it decays. The brick not only makes a cheap and indestructible bottom, but they can be set close together or a little way apart, as more or less drainage is required, while their porous nature enables them to hold moisture, so that they will be always damp. When the soil is removed they can be turned over or cleaned off with perfect ease.

I need not here enlarge upon the way in which the five benches in each of these houses are arranged so as to secure unobstructed sunshine and free air, and render the care of them easy and convenient. The Roses themselves were the best evidence that the houses furnished conditions in which they delighted, and no one ever saw a more superb growth than was shown by the long lines of Meteors, every plant with thick dark green foliage almost to the ground, and carrying a crop of buds which gave promise of a limitless supply. Mr. Pierson assured me that the plants would be in just as vigorous bearing as they now are when he clears the benches in June, scrubs everything out and fills the pores of the yellow pine flooring and all the other woodwork with crude oil. The first house was carrying its fourth crop, and every piece of wood was apparently as sound as when the house was first built. How the soil is renewed and new soil restored to the benches; how the exhaust steam from the pump is utilized to mollify the temperature of the water applied to the plants; how fertilizers and insecticides are applied in the cheapest and most convenient manner was explained by Mr. Pierson in the essay to which I alluded in the beginning of this letter, and most of the points are on record in vol. iv., page 407, of GARDEN AND FOREST.

Mr. Pierson begins to change his Roses early in the season, and is about ready now to discard his old plants for new ones in one house, and he will proceed with one after another until the whole lot is renewed. For this purpose he begins to propagate in January, and keeps on through April. Three months after propagating, the plants fill three-and-a-half-inch pots, and are ready to be transferred to the benches. He believes that Roses for winter cutting should be thoroughly well established, and that those which are set on the benches later than June do not give as good crops during the winter as those that are set earlier. To meet the demands of his market, however, he needs Roses all the year through, as he cuts from 2,000 to 7,000 buds a day, or rather more than a million a year. Different markets, he finds, demand different varieties and dif-

ferent qualities of Roses. Boston, for example, pays rather more for the best Roses, although the market is limited, and it could be glutted with the amount sent to New York. In Boston the greatest demand is for Catherine Mermet and The Bride, while New York selects American Beauty and other big Roses. Meteor is the variety which is grown here in largest quantity, and the firm has become famous for the quality of these flowers. Next in order of quantity sold comes Kaiserin Augusta, followed in order by Madame Testout, Bride and Bridesmaid, with Perle des Jardins, Madame Cusin, Catherine Mermet and Wootton in considerable numbers. This range of houses is given up almost entirely to Roses, but some bulb-forcing is done, one of the north side houses being devoted to that purpose, and some 300,000 plants of Lily-of-the-valley are flowered here annually. There is, too, a nursery for select trees and shrubs on the Scarborough farm which is well worth describing, but I will not trespass on your space for this nor for any detailed account of the interesting things in the original Tarrytown plant, where I saw a lot of Pandanus Veitchii colored with remarkable uniformity, and many other specialties.

Any account of a visit here would be inadequate, however, without some mention of the Cannas with which Mr. Pierson's name has been for some years identified, and which won for him many well-deserved premiums at the World's Fair. In the Tarrytown houses, where most of the early sorts and all the promising new introductions are planted together, one has an opportunity for study and comparison which cannot be excelled in this country at least. Without mentioning the well-known Madame Crozy, Mr. Pierson considers Count Horace de Choiseul and President Carnot the best of the older sorts, although they have never attained the popularity of some other varieties. The first of these is a dwarf plant, with large flowers of a deep carmine, and President Carnot has chocolate-maroon foliage, with good-sized heads of orange-scarlet flowers.

Of the plants which had become sufficiently abundant and cheap to be sold in quantities last year, Alphonse Bouvier takes the lead as the best all-round Canna for bedding. It flowers early, freely and constantly, and its immense clusters of bright crimson flowers are held clear above the foliage. Paul Marquant bears very large flowers, which stand out separately on the truss and are of a distinct apricot or salmon color. It does not grow so tall as Alphonse Bouvier, but is better for the greenhouse. Captain P. De Suzzoni is the best yellow-flowered bedding Canna. The flower is slightly mottled with scarlet, but this does not detract from the purity of the yellow, as is the case with some varieties.

Of the plants which have been introduced for a year or two, but which are offered now for the first time at popular prices, Charles Henderson is distinguished for its good habit, large flowers, and solid crimson color, with gold pencilings in the throat. It is a counterpart of Madame Crozy, except in color, with larger individual flowers and truss. Florence Vaughan seems to have disappointed some purchasers because it was not a true yellow, as they had supposed, but on the whole it is an exceptionally fine Canna and the best of the spotted type, being a lemon color spotted with bright red. The flower is very large and so is the truss, and it has no superior in habit or in robustness.

Among the new introductions which are held at high prices this year, Königen Charlotte, which belongs to the Crozy type, is perhaps the most distinct. It is a compact grower, and the scarlet petals have a broad yellow margin, which differs essentially from the narrow edging of Madame Crozy. These colors do not blend together, but the line between them is sharply marked, the yellow of the margin being intense and the scarlet unusually brilliant. One hardly knows whether to say that the petals are scarlet with a yellow margin, or yellow with a scarlet centre. Germania is dwarfer than Madame Crozy, and much like it, although the flower is larger and the edging narrower. Sophie Buchner is another very promising variety.

Out of numerous yearly importations growers are satisfied if one or two plants, really superior and good enough to keep, are found. So far, the only American seedling which has attained any great success has been the Star of 1891, an elegant pot-plant, and a mass of scarlet when it blooms, although its individual flowers are not so attractive as those of Madame Crozy. Many American growers are experimenting with new seedlings, and a fine one called Columbia, with a striking scarlet flower, was exhibited at the World's Fair by Kramer, of Cedar Rapids, Iowa. Mr. Pierson himself raised last year 500 plants, not one of them being a chance seedling, but all carefully crossed from what he considered the very best varieties. Of those which I saw in bloom Sunshine was noteworthy. It has immense apricot flowers, with a sheen on the petals like that

of a La France Rose, giving it a particular glow in the sunlight. The petals are so broad that they overlap and give the flower a full, round appearance which I have not seen in any other Canna. It is of medium size and grows strongly, and is a distinct improvement on Paul Marquant, which it somewhat resembles in color. Golden Heart has an intense scarlet flower with a decided yellow marking in the centre. The scarlet is so bright that the contrast is rather pleasing. The head is large and the individual petals are reflexed, so that the flower is not flat. Another seedling so distinct as to stand for a separate type, is a decided break in habit. It is so tall as to be useless as a pot-plant, but its immense head is two or three times as large as that of any other Canna, and it lasts so long that the plant seems to have much promise as a bedder. The flowers may be called a pinkish scarlet, and though they are of great size they are not perfect in shape. Oriole is somewhat similar to Königen Charlotte, although it is rather taller and a freer bloomer. The scarlet and yellow, however, are not separated by any sharp distinction, but rather blend together. The seed parent of this plant was Montefiore, but the flowers do not fade and hold on to the stem, as they do in that variety. Another variety resembles the standard J. D. Cabos in flower, but it has green leaves.

Altogether, these seedlings show that we may expect in years to come a continued advance in this class of plants. The time seems to be at hand when we may expect types as distinct from and superior to those which we now possess as Madame Crozy was from the Cannas which we had before the advent of that epoch-making variety.

New York.

S.

Notes.

Professor Trelease issues, in advance sheets from the Fifth Annual Report of the Missouri Botanical Garden, a revision of the North American Species of *Gayophytum* and *Boisduvalia*, with ten illustrative plates.

A summary of receipts of southern vegetables in this market during last week, by rail and steamer, shows above 59,000 crates and barrels. Cabbage is the heaviest vegetable crop shipped from Florida, and tomatoes are coming by the solid car-load. Some 20,000 crates of onions are received from Bermuda each week.

The Massachusetts Horticultural Society at its last meeting gave a first-class certificate of merit to a variety of *Cornus stolonifera*, the Red-osier Dogwood, with bright yellow bark. It was found in Stockbridge, Massachusetts, by Mr. Warren H. Manning, and seems to be sufficiently distinct in color to be worth using for winter effect in the shrubbery.

Last week Mr. Gerard spoke of the remarkably pure dark blue of the typical form of the Chilian Crocus, *Tecophilæa cyanocrocus*. Since then he has sent to this office some other varieties which are quite as beautiful. Some of the flowers have petals of clear light blue, with pure white bases. Others, again, are nearly white, the blue coloring appearing only as an edging. In fact, all the forms are most attractive, and they are very valuable for early garden-flowers in a warm front border. They have survived two winters in a sunny and sheltered situation on the grounds of Mr. John McElvery, near Prospect Park, Brooklyn. How hardy they would be in more exposed situations remains to be proved.

The announced circular from the Department of Agriculture on the appearance of the San Jose scale in the east has appeared. From it we glean that, perhaps, this insect is already established in New York, Michigan and other states where fruit-orchards abound. The specific name of this scale, *Aspidiotus perniciosus*, is significant, as it is really one of the most dangerous of pests, and it is recommended that quarantine regulations be at once established to restrict its spread. In the mean time no orchardist should admit a young fruit-tree or a single cutting from a distance without satisfying himself absolutely that it does not carry a single specimen of the scale. Fruit-growers should have impressed upon them that just as soon as this insect is found the most strenuous measures must be taken to stamp it out. Trees badly infested should be instantly burned, and fruit-growers should see to it that combined and organized effort be made at once.

Just now some of the most beautiful of the early wild flowers hereabout are at their best. The white flowers of Spring Beauty, with their deep rose-colored veins, are abundant on the lawns of Central Park. Of course, the delicate blue Hepatica, the white or pinkish Rue Anemone, and the true

Anemone are all sparkling on the margins of the woods. Within less than an hour of the City Hall are beds of Dog-tooth Violets half an acre in extent, while in another direction, and nearer still, can be found masses of *Dicentra Cucullaria*, Dutchman's Breeches, with spikes of oddly-shaped, but beautiful white, yellow-tipped flowers rising from the finely cut foliage. These plants delight in a light open soil of leaf-mold, and they are often associated with the Blood-root, which loves the same soil and situation, and the snowy flowers of this plant are now open, while near by, at the edges of the turf, just where the rocks break through, the early Saxifrage is in full bloom.

A border of *Narcissus* is just now especially pleasing. The Tenby Daffodils are about past, but the Campenelle Jonquils, which have been blooming for a fortnight, are still in first-rate condition, and although the bulbs are very cheap, there is a grace of form and richness of color about these flowers which make them quite as effective as many of the rare and costly kinds. Many of the fine Ajax varieties, like Ard Righ, Golden Spur and Emperor, and the two-colored forms with large trumpets like Empress, Princeps and Horsfieldi, and the white and sulphur-colored ones like Cernuus and Pallidus precox are still good, while the later varieties like *Narcissus poeticus* have not yet begun to show a flower. Some of the rarer forms, of course, are very expensive, but there is a sufficient number in all the sections—that is, in the long-crowned group, the group with the chalice-shaped crowns, like Sir Watkin and Leedsi, and the small-crowned Daffodils, or true *Narcissi*, which can be had at reasonable prices—to give constant variety for six weeks at least.

Mr. John W. Harshberger writes in the *Botanical Gazette* that *Ranunculus acris* must be added to the list of poisonous plants, or, at least, to those which irritate the skin. Specimens of this species, which had been in alcohol for more than a year, were distributed to a class in the University of Pennsylvania for study, and a day or two afterward an intense itching sensation was experienced by all who handled them, while the skin between the fingers became red and covered with minute pustules like those produced from contact with Poison Ivy. The acrid juice, which is universal in *Ranunculaceae* plants, and which is usually dissipated when dried, had been evidently extracted from the specimens, and when the alcohol evaporated the irritating principle was left on the hands. Mr. Harshberger adds that the fruits of the Poison Ivy and Poison Sumach are both eaten in large quantities by the crow, and one case is recorded where 153 seeds of Poison Ivy were found in one crow's stomach; while a single pound of dried excrement from a roost in the National Cemetery at Arlington contained 1,041 seeds of *Rhus Toxicodendron*, 341 seeds of *Rhus venenata*, besides 3,271 seeds of other Sumachs, 95 seeds of *Juniperus Virginiana*, 10 seeds of *Cornus florida* and 6 seeds of *Nyssa sylvatica*.

A careful estimate of damage by recent frosts to strawberries about Norfolk places the injury at seventy-five per cent., and in other sections of Virginia and Maryland at fifty per cent. of the crop, but with larger plantings than in previous years the supply will not be proportionately shortened. North of these states the Strawberry crop is not injured. The color and flavor of North Carolina berries have greatly improved during the past week, and some of them, as for example Hoffman's Seedling, have been really excellent. The choice berries bring as much as thirty-five cents a quart by the crate, while the bulk of the crop of medium quality sell for twenty-five cents a quart. A few car-loads of California oranges arrived last week, the fruit coming from districts not affected by the heavy January frosts. There is some place in our market for this fruit now when the Florida season is waning, but prices are hardly encouraging to the shippers. The best Florida oranges of this season are now here, and choice fruit from famous groves of late varieties bring \$5.00 a box, while the first arrivals of the Jaffa and Hart's Tardiff—summer varieties which are found here until July—bring as much as \$5.50 at wholesale. Fancy grades of highly colored grape fruit cost \$5.50 a box, unloaded from the steamer, and there is not enough of this popular fruit to meet the demand. Although immense quantities of bananas are coming—one firm alone selling 45,000 bunches last week—prices remain as high as \$1.70 a bunch for the best Aspinwall and West Indian fruit. The new crop of pineapples from Cuba are now here, although not yet sufficiently ripe. With oranges and apples scarce and high, pineapples are likely to be the popular fruit in May. Baldwins, Russets and Greenings are the only apples now quoted, and these cost from seven to eight dollars a barrel at retail, an advance of fifty cents over the price of a week ago.

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The Spring Garden.

A CORRESPONDENT writes that our leader on this subject, published three weeks ago, has strengthened his purpose, already formed, to make a more elaborate preparation for early flowers in years to come, and he asks for assistance in the way of more detailed instruction. If we are to infer from this request that our correspondent wants a definite plan for planting, we shall be compelled to disappoint him. Plans cannot be cut like ready-made garments and kept in assorted sizes that are guaranteed to fit any piece of land. One who designs a garden must not only know the shape and contour of the place, but he must know what is beyond its boundaries, what ought to be planted out of sight and what prospects can be made more pleasing by an appropriate frame of foliage and foreground treatment. No one can give even a satisfactory list of plants for any place unless he knows particulars as to its soil, drainage and general aspect. Occasionally some plan of an imaginary place will contain points of suggestion which may help to solve one of the hundred problems which are always encountered in such work, but a plan for a paper lot—that is, for a mere outline map of given shape, with no indication as to the character of its surface or surroundings—is worth nothing. A plan must be adapted to special features if it illustrates any principle which is of general application. The artist who marks out an acre and then fills it in so that it will look neat and trim on the map gives nothing of value. The designer who makes a good planting plan of a real acre, and explains why he places each shrub and tree and herb in a given situation to meet the special requirements of that particular place, will furnish nothing which can be absolutely reproduced anywhere else, because every attempt at servile imitation will be worse than a parody on a good original; but he will at least show the kind of problems which must be solved, and he can give some idea of the way in which a genuine artist attacks his work. We gave, in the article alluded to at the outset, in a very general way, the strong features of one effective garden, but we did not expect that it would serve any better purpose than to furnish some one a hint

which might help him in studying his own particular place.

In a spring garden of any size early-flowering shrubs are indispensable. But here again a mere catalogue of those which bloom in April and May, for example, is really worth little. What the planter needs to know is not only that they flower at a given time, but how large they grow, what shape they assume, whether their branches strive upward, spread out broadly, or arch to the turf. He must be familiar with the character of their foliage, to know how they will compose with other shrubs; he must know whether they will thrive in partial shade, whether they will need full sunlight, and a hundred other things which can only be acquired by long personal acquaintance. There is hardly a shrub in cultivation which has not been carefully described in GARDEN AND FOREST, and many of them have been figured. Their relative value and their use for particular purposes and positions have been carefully set forth, and if we should repeat here what we have already written about them this article would expand into a large volume.

The same may be said, in a general way, of spring-flowering herbaceous plants, so that a detailed description of them and their cultivation would be practically a treatise on the entire art of gardening. Of course, this is not written for the purpose of discouraging any one. We only mean to say that gardening, at its best, is one of the fine arts; no rule of thumb for designing and planting even a small place can be laid down. The real fascination of gardening arises from this truth. Any one who begins to study the subject will find it constantly opening new avenues of interest in which are found perennial pleasures. These pleasures are fresh every day, and the delights of watching and waiting and hoping will prove quite as refined and absorbing as those which the planter will enjoy in the ultimate realization of his best work, and the flowering of his plants will be only the culmination of a pleasure that he has felt for months in anticipation as he has watched the growth of his shrubbery and the development of his seedlings.

Of course, flowers which delight us in the spring all make their preparation for blooming a year before. The buds on the early-flowering Heaths and Daphnes, Cornelian Cherries and Andromedas, Honeysuckles and Spiræas, Primroses and Lilacs, Kalmias and Rhododendrons, are all formed during the summer, and are carried through the winter wrapped up in warm coverings to open the next year. Herbaceous plants store up food in fleshy roots, corms, bulbs and tubers ready to be transformed into beautiful flowers under the genial conditions of the following spring. It is none too early, therefore, to begin preparation for a spring garden now. If the work is intelligently prosecuted a very admirable result can be made for next year, but many things will become better with age, and the garden will grow more beautiful with each succeeding year. Many hardy plants can be raised from seed, as, for example, Iceland Poppies, Aquilegias, Spring Adonis, Primulas, Aubrietias, Rock Cress, Larkspur, Daisies (Bellis), Candytuft and Lupin. These will require constant care, but where one has a good gardener, or is prepared to give personal attention to them, much pleasure and instruction is to be had from watching their growth. And yet, where only a few of these are needed, time and labor will be economized by buying a few of the plants now or in the fall. The seeds of some perennials germinate so slowly, and they need so much special attention, that beginners would do well to get the plants or bulbs. Our dealers in hardy plants have of late years offered these in great abundance and variety, and the most beautiful and effective ones can all be had at reasonable prices. One who knows where Blood-root, Dog-tooth Violets, Houstonia, Cypripediums, Mertensia, or Solomon's Seal, are growing wild, can easily collect a supply of any of these and of other plants from their natural haunts, the best time for lifting usually being after the foliage has begun to brown.

So great a proportion of early-flowering herbaceous

plants have bulbous roots that a large garden could be made beautiful with these alone. The cultivation of ordinary Dutch bulbs presents no difficulties, and every leading seedsman in the country can furnish a good selection. But as soon as one begins to take a special interest in plants he will long for something besides the standard and staple sorts, and a good beginning of a most interesting collection can be made with a modest outlay of money. Besides the regulation Tulips, for example, the planter will certainly want some of the so-called botanical Tulips, or species which have not been modified by cultivation. Mr. Orpet mentions some of these on another page of this issue, and the catalogues of foreign houses contain, perhaps, fifty, most of which will continue and multiply from year to year. Among the Narcissi there are probably a dozen leading sections, and these are broken into subsections, each of them containing numerous named varieties. Besides the standard varieties of Fritillaries, Crocuses, Snowdrops, Chionodoxas, Scillas, Ornithogalums and many more, an almost endless number of species can be had, and every year brings its new discoveries and introductions, and this opens up possibilities for life-long study and enjoyment. Many of these bulbs cannot be found in stock in this country, and the best plan for a beginner is to make out his list and ask the American seedsman with whom he deals to import them for him. No spring garden will be satisfactory without some of the early Irises about which Mr. Gerard has written so much in these columns, but which are practically unknown to any extent in this country. And then there are possibilities with the plants from the Pacific coast, which growers like Mr. Horsford are testing every year. Special cultivation will be required for different species if they are to be had at their best, and we can only say here that the well-indexed volumes of GARDEN AND FOREST give much expert counsel for beginners, and cultural directions for the different seasons appear in every issue. It is hardly necessary to add here that a great many spring-flowering plants will develop into their best forms in a well-made rock-garden. As a rule, the earliest flowers will be found in light, well-drained soil and sheltered from cold winds, so that they will respond to the very first warmth of the spring sun, and the bloom of the same varieties will be prolonged if some of them are planted in positions where the ground will keep frozen longer and where they will not be awakened up from their winter sleep so early.

Forest-fires—How to Stop Them.

THE following short and pithy paper was contributed to the late meeting of the Forestry Associations by Mr. H. B. Ayres:

The best way to stop them is to prevent them, and we cannot prevent them until the people appreciate the damage they do. Americans, the imported ones as well as the aborigines, do not make an effort unless they see some reason for it; and while our fire-wardens report thousands of acres burned over, but "no damage done," why stop the fires?

If we could but know the full effect of forest and prairie fires, and multiply their effect by their extent (as should be done), we would all rush out and stop them as if they were approaching our own houses; for they are just as truly burning up our property and the very resources of the country. The technical details of the injurious effects of these fires I am not prepared to enter into; but the value of the merchantable material destroyed is but a very small fraction of the damage done by them. While this subject is so slightly appreciated by most of the people, and, perhaps, too lightly by all of us, I venture the hope that future generations will understand these mysteries better, and may think, with some gratitude, of the American Forestry Association and its battle with the dragon.

How stop fires? First, inspire every person with a deeper love for his country. Second, teach him the proper use of fire by showing the danger of its misuse: Light a match on horse-back and let it fall upon dry Pine-needles. Throw a cigar-stump among dry leaves or turf. Fire a gun so the combustible wad will strike some dry Maple-punk. Start a camp-fire against a tree, an old log or upon peaty ground, throw several pailfuls of water upon it, leave it, and then bring your pupil

back a week afterward to see mile after mile of blackened forest and hear the roar and crackle of his little camp-fire as tree after tree falls before it. Take him into the unburned forest and show him the millions upon millions of little seedlings devoting their plant-lives to man's service. Then by the touch of brimstone consign this host of friends to the flames.

By this time he will be prepared to take a hearty interest in stopping fires, and will speak to those he meets of the damage they do. He will go into the woods and study these fires as they burn. He will soon see that a foot-path, a brook, a stretch of lowland often stops a fire. This will naturally lead him to make trails and bridle-paths and roads through his forest, especially parallel to streams, thus forming a double barrier and securing access to water where most effective. It may often be advisable to remove combustible material from between the trail and the brook or from other strips of ground—safety strips. He will probably establish lookout stations on hill-tops or build towers above the trees, and may even have these stations connected by telephone where there is special danger. If the forest be unusually dry and full of such inflammable material as to make a rushing fire imminent, he will patrol his forest on the bridle-paths and will keep close watch on every party that enters his territory, seeing especially that their camp-fires are extinguished when the party moves.

Further than these few suggestive remarks I do not know what more to say about stopping fires. The sum of the matter is that legislation is ineffective unless supported by the sentiments and the acts of the people. The people must be converted (at so much a head, if necessary); then, when the movement becomes popular, the warden can apply himself directly to the fires, studying—not fires in general, but the specific fires of his forests—and if as intelligent and faithful as the average American woodsman he will quickly find a way to stop them if the means are at command.

Notes of Mexican Travel.—IX.

SAN MARCOS AND THE VOLCANO OF COLIMA.

FROM Zapotlan to the great sugar plantation, the Hacienda of San Marco is some forty miles as the trail runs. This leads through the lava beds, a rocky tract of frightful character, whose meagre, heated soil offers congenial conditions for *Aralia pubescens*, *Acacia pennatula*, *Lysoloma Acapulcensis*, *Gnazuma ulmifolia*, *Stemmadenia bignoniflora*, *Bombax Palmeri*, and half a dozen species of *Bursera*—*lancifolia*, *graveolens*, *Palmeri*, *bipinnata*, *fagarioides* and *Pringlei*. Next it threads, over sandy soil, a forest of Pine which flanks the Nevado on the east, in its way winding around deep ravines and over dividing ridges, and crossing midway the barranca of Atenquique, a barranca 600 feet deep and one-fourth of a mile wide, whose sides in places rise perpendicular nearly to the top. Then, leaving the forest, it descends into the more open river cañon at Patinar, but soon climbs out again to pass over high open ridges, and finally crosses the barranca of Beltran, on whose southern bank gentle slopes, a mile or two broad, are occupied by the cane-fields of San Marcos. The barranca of Beltran comes down from between the Nevado and Volcano ten miles to the west; and near the place of crossing discharges its stream into the river which flows south from Patinar through a deep but broad cañon at the foot of the cane-fields. This barranca is quite as deep a chasm as that of Atenquique, and even narrower. On its steep walls hangs in numerous folds the trail either paved with smooth cobblestones or hewn from the solid rock. A low wall of masonry is raised along its outer edge to prevent the animals falling off; but as the traveler for the first time looks over it from the back of his slipping mule on to the tree-tops and house-tops far below, his head becomes giddy and he prefers to dismount. This barranca did not yield me many species, since its precipitous wall presents but scanty foothold for plants, and its narrow floor is swept at seasons by mountain torrents.

As we ascend to the hacienda by a long lane through cane-fields, the grand house of the proprietor, with its heavy walls, its towers and its colonnades, perched on a rock high above the sugar-mills and the ample quarters, presents much the appearance of a feudal castle. Out of the Pine forests in the background looms the vast naked form of the

volcano. Upon my presenting to the proprietor a letter from my host in Zapotlan, a room was hospitably placed at my disposal, while I should explore the neighboring barrancas and mountains.

My first attempt to find the volcano was unsuccessful. Among forests and foot-hills at its base I fell in with two Indians, who led me across Beltran, and put me into a faint trail, which they seemed to think led to the volcano. I climbed for three hours, and ever the trail grew fainter, and ever there yawned between me and the volcano the impassable barranca, till I found myself in dense thickets of *Ceanothus azureus*, near the summit of a mountain spur. I was on the Nevado again. Seven hours I clambered over that mountain-side without water and in the heat of June, yet found absolutely nothing to collect, nor saw vestiges of many plants which were to spring up later.

On the following morning at daybreak I was leaving the hacienda with an Indian charged to show me the right trail. By nine o'clock I was breasting the steep slope, first up through heavy forests, then up through more open deer parks, where I started up a herd of deer, then up along the narrow crests of ascending ridges, till finally at one o'clock I stood on an open height close beside the upper cone of the volcano. On the one hand were the upper slopes of the Nevado, verdant with springing grass and scattered groves of Pine, gilded by the tropic sunlight, and lying serene and silent; on the other, in extreme contrast, lay a scene of desolation and death. Apparently not more than half a mile away, beyond a field of naked rocks sown in wildest confusion, among which no indications of life appeared, rose the huge volcano, ashen gray in color. From various vents among the ledges near the summit smoke was issuing, and about the vents could be seen deposits of sulphur. As I closely scanned the volcano at so short a distance, it seemed entirely practicable to climb in safety to its very top. But time was lacking, and witnesses, so I turned homeward.

On the topmost ridges were found several individuals of a *Yucca* strange to me, and not yet in flower. Its stem was simple, a foot thick, four to six feet in height, and crowned with numerous leaves two feet long, and a widely and numerous branching panicle, ten or fifteen feet high. Here was collected *Valeriana subincisa*, with soft, woody stems six to fifteen feet long, reclining on shrubs, etc. *Ribes Jorullensis*, forming thickets ten to fifteen feet high, was abundantly fruiting. To appease thirst I ate freely of the black berries, which were not unpalatable, but within three hours bitterly repented having done so, for they proved a swift and violent purgative. An hour after night-fall I entered through the portal of the hacienda, pleased to be able to testify, against the admonitions given me in the morning, that it was really possible for one to reach the volcano and return on the same day.

San Marcos yielded me a mule-load of plants; and in its deep, wet glens were seen a number of strange Ferns and other interesting plants, which would not be ready for the press till autumn. The heat and increasing rains rendered it inexpedient to go further down into the hot lands; so I returned to Zapotlan, and soon after pushed back through deepening mire to Guadalajara, and the plants claiming attention there.

TEQUILA.

As has already been explained, the course of vegetation in Jalisco reaches its height during September. All through the winter months the collector will meet with a few plants in flower. These are chiefly ligneous species, either denizens of mountain-forests or of the warm seclusion of barrancas and of the warmer coast regions. A succession of these extend their flowering season into April and May, the driest and hottest period of the year; and to their number are added not a few perennial herbs, mostly with tuberous roots—herbs which have the strange habit of shooting up and flowering out of soil hard-baked and dry as dust. Other perennials, more numerous, spring out of the warm

earth under the influence of the earliest scattering showers; and by the time the soil is well moistened and softened by increasing rains all the annuals are vegetating apace. Thus, in Jalisco's calendar of seasons, July is the vernal month, and midsummer falls in September.

At this time of teeming blooms I was following up in the barranca near Guadalajara clews to several plants greatly desired for my distribution, when it became apparent that in this uppermost barranca I was working about their outposts, or near the limit of their range, therefore I lost no time in moving farther down the River Santiago to Tequila, some forty miles distant, and near the centre of its wonderful barranca system. Dr. Palmer in 1886 had found this district proportionally richer in new species than any other, and I, too, had also spent ten days there to good advantage earlier in the summer. Here, now, for a month from the 21st of September, the best month of the year for a botanist, I found myself surrounded by so many interesting plants that the most incessant activity was necessary to secure my complement of specimens of all.

The town of Tequila is on the line of travel between Guadalajara and the seaport of San Blas. It is famous as the centre of the manufacture of the liquor called *Vino de Tequila*, or simply *Tequila*, a strongly alcoholic liquor, which is distilled from the roasted crowns of a species of *Agave*, or *Maguey*, the plantations of which occupy nearly all the arable land for miles around the town, giving to the landscape a bluish-green color. *Tequila* lies at the north-west base of a forest-covered mountain, nearly 9,000 feet high. This *Sierra de Tequila* is dominated by a pyramid of naked rock, which rises in a singular manner out of a great gulf near the summit, and is nearly encircled by a wooded crest scarcely less elevated than itself. West of the town, and some five hundred feet higher, is an uneven mesa, whose scarped verge frowns over the town, the cliffs and their talus offering shelter to woody growths. A mile or two north of the town the undulating *maguey* fields end abruptly, and the surface drops into a vast abyss fifteen hundred feet deep, the barranca of *Tequila*. Its semicircle of precipitous rock is two or three miles in extent. From the foot of the cliffs, slopes, partly covered with plantations of *Agaves* and tropical fruits and partly in a state of nature, sweep down to the bottom of the barranca and away through a few miles to the wide and open cañon of the great river. Beyond the river wild, rugged slopes rise, with alternating scarp and glade, to a height of 3,000 to 4,000 feet, an expanse of utmost grandeur tinted with rich and varied hues. Out of the barranca ledges, here and there, streams of tepid water burst in many-eyed fountains and unite in the bottom to form a raging river. In the depths of the barranca, surrounded by its gardens and Orange-orchards, and with its white pavilions and colonnades half hidden from view by tall *Mango*-trees, is situated the *Hacienda de Portrero*. It is connected with the town only by slender and rocky trails. In this great barranca of *Tequila* the expectations which brought me from Guadalajara were more than realized, for the shaded bases of its cliffs yielded many species not before seen by me.

Pre-eminent for beauty among the plants found in the *Tequila* region was the new *Tephrosia macrantha* (see fig. 32, p. 175), a shrub six to ten feet tall, which bears at the end of its branches, in diffuse panicles a foot in length, flowers shaded purple and white, which are in the way of Sweet Peas and nearly as large. For weeks it lights up the thickets of hill-side ravines with masses of pleasing color.

Charlotte, Vt.

C. G. Pringle.

A house and grounds to be picturesque and interesting in the highest degree must suggest the idea of necessity, showing the devotion of the builder rather than mere luxury. We need to see the honest and naked life here and there protruding. What is a fort without any foe before it, or that never has sustained a siege? The man whose purse is always full, and who can meet all demands, though he employs the most famous artists, can never make the most interesting country-seat. He does not carve from near enough to the bone.—*Thoreau*.

Foreign Correspondence.

London Letter.

NEW and rare plants exhibited at the fortnightly meetings of the Royal Horticultural Society may be said to comprise everything of any value that is introduced into English gardens. Every meeting now brings large numbers of exhibits such as connoisseurs delight to examine, and the number of certificates awarded is considerably greater than it was a few years ago. The meeting last week was, as usual, remarkable for the number of fine Orchids shown. The following plants were of exceptional interest, and were awarded certificates:

EULOPHIELLA ELISABETHÆ was shown in flower by Sir Trevor Lawrence. I have more than once described the peculiarities of this distinct and beautiful Orchid, which, as shown that week, is fully as handsome as it was represented to be by its introducers. Sir Trevor's plant bore two scapes each a foot long, and clothed for two-thirds of their length with waxy flowers two inches across, pure white, flushed behind with pink, the buds bright purple; the lip is three-lobed, small and white, with a yellow disk.

DENDROBIUM FALCONERI GIGANTEUM, also from Sir Trevor Lawrence, is distinct in having longer and thicker pseudo-bulbs than the type, while the flowers are half as large again and richly colored. It was awarded a first-class certificate.

BRASSIA LAWRENCIANA, a handsome plant, now rare in collections, although introduced over fifty years ago. Mr. R. J. Measures sent a beautiful example of it, the long narrow segments, suggestive of spiders, and colored green, yellow and brown, with a creamy white lip, giving the plant just that kind of appearance which most of us associate with Orchids. As it had never had a certificate the committee awarded it one, presumably to attract attention to it.

EPIDENDRUM ELLISII is a new species which will shortly be described in the *Kew Bulletin* by Mr. Rolfe from material supplied by Mr. W. Ellis, of Dorking, who exhibited it in flower at the meeting of the Royal Horticultural Society, where it was awarded a first-class certificate. It belongs to the section *Eupidendrum*, and is very near *E. longatum*. The flowers are borne in a large elegant panicle, and are an inch across, colored rich rosy red.

DENDROBIUM CREPIDATUM.—A very fine form of this old-fashioned, and now neglected, species was shown by Lord Rothschild, under the name of Tring Park variety; the flowers were as large again as the type, white, heavily tinged with rich rosy purple, the lip orange-yellow at the base, white in front, with a crimson apex. It was awarded a first-class certificate.

DENDROBIUM HILDEBRANDII, a new species from the Shan States, Upper Burma, was shown by Messrs. Low & Co. It has pseudo-bulbs like those of *D. nobile*, flowers in short axillary racemes on the leafless pseudo-bulbs, and each flower is as large as *D. tortile*, and colored creamy white, with a deep yellow velvety lip, suggestive of the lip of *D. aureum*. I have seen dried specimens of this *Dendrobium* which show that it varies considerably in the shade of yellow of the sepals and petals, some being almost pure white, others yellow and others greenish yellow; the lip also varies, some of the flowers having eye-like blotches of purple on the disk of the labellum.

ONCIDIUM LUCASIANUM, from Messrs. F. Sander & Co., may be called a glorified *O. abortivum*, the lip, the most conspicuous part of the flower, measuring an inch across and colored rich yellow. It obtained an award of merit.

ANTHURIUM CHAMBERLAINIANUM.—This is a very handsome species, which was first flowered in the collection of Mr. Chamberlain, M.P., after whom it was named by Dr. Masters about twelve years ago. Mr. Chamberlain exhibited a plant of it last week, which was of astonishing dimensions, the heart-shaped leaf-blades, measuring three feet in length and width, being elevated on semi-erect straight thin stalks five feet long, while the spathe was nearly a foot

long, also cordate and colored dull flesh-red. It is one of the most striking of the large-leaved *Anthuriums*. There is a small example of it now in flower at Kew.

RICHARDIA HASTATA, shown as *R. Lutwychei*, is a plant which is likely to come into favor again in consequence of the interest aroused in this genus by the introduction of *R. Pentlandii* and *R. Elliotiana*. The first-named has medium-sized yellow spathes with a blotch of purplish-crimson at the base.

IRIS HELENÆ, shown in flower by Mr. H. J. Elwes, is a beautiful species with large lilac flowers veined with red and having dark purple fall-petals. It was introduced in 1880 from Palestine. It belongs to the *Oncocyclus* section, and is, according to Mr. Baker, very near *I. Sari*.

IRIS ROBINSONIANA, of which a description was published in *GARDEN AND FOREST*, vol. iv., p. 352, prepared from a fine specimen, flowered in a sunny greenhouse at Kew in 1891, was shown in flower by Mr. Bartholomew, of Reading. His plant was small, having been grown in a pot, and the flowers were not as large as those produced at Kew. This *Iris*, however, is of greater value as a graceful foliage-plant than for its flowers. It is almost as large as the New Zealand Flax (*Phormium tenax*), but instead of the leaves being stiff they are curved and elegant. The plant is a native of Lord Howes Island.

SENECIO SAGITTIFOLIUS.—This fine plant is now flowering again at Kew, where it gets cool greenhouse treatment. I noted it in *GARDEN AND FOREST* last year as a plant likely to prove valuable in the garden, and especially in places where it could be grown permanently out-of-doors. It forms a large rosette of sagittate leaves, each three feet long and about a foot wide, with a crested midrib, and the flowers, which are borne in a huge corymbose panicle eight feet high, are white, with a yellow eye, and measure one and a half inches across. Mr. Gumbleton, who has tried it out-of-doors in his garden near Cork, writes recently: "I hope you will put out into the open border one or more of your fine young plants of *Senecio sagittifolius*, as it is quite hardy, the twenty-nine degrees of frost experienced here in January last having left unharmed the two plants I put outside last summer. One of these is now showing three spikes of bloom, one from the main crown and two from side shoots." The Kew plants are all offshoots from the plant flowered last year, the central part dying after the flowers faded.

PRUNUS SERRULATA.—This is a large double-flowered Japanese Plum, which has been in cultivation at Kew about ten years. It is in every way as beautiful as the finest double-flowered Cherries, the flowers being fully one and a half inches across, semi-double, and white, tinged with rose. Small trees of it are wreathed in bloom at the present time, and among hosts of all kinds of hardy Rosaceæ—all flowering exceptionally well this year—they are the most attractive. *P. serrulata* does not appear to be known in gardens. The nearest approach to it is one sent out by Mr. Anthony Waterer some years ago as *Cerasus Watereri*, but in this, fine though it is, the flowers are smaller and slightly more tinged with pink. Certainly *P. serrulata*, which was obtained for Kew from France, is a spring-flowering tree of exceptional merit. [*Cerasus Wateri* is a form of *Prunus Pseudo-Cerasus*, with semi-double flowers.—ED.]

DAFFODILS AT KEW.—Probably you have heard enough about Daffodils for one season, but I cannot refrain from mentioning them again for the purpose of enforcing the lesson taught by their use as "bedding plants" for spring effect at Kew. The large terrace garden in front of the Palm-house, which in summer is filled with the usual display of red Geranium and yellow Calceolaria, is now a glorious picture of yellow, all the beds being aglow with Daffodil-flowers, including thousands of Emperor, Empress, Grandis, Cynosure, Sir Watkin, etc. These, rising out of a setting of well-kept rich green turf, make a charming, refined and uncommon display, a monotone in yellow, a color always effective in the garden, but especially welcome in spring. The Tulip and Hyacinth displays of previous years will not



FIG. 32.—*Tephrosia macrantha*.—See page 173.

bear comparison with this field of golden Daffodils. At the end of next month they will be lifted, laid by the heels in coal-cinders to finish and ripen, and then stored for a month or two in a shed, to be planted again in October.

CANNAS.—Mr. George Paul, the Chestnut nurseryman who has paid special attention to the improved race of garden Cannas, read a paper upon them before a recent meeting of the Royal Horticultural Society. He dealt chiefly with

their cultural requirements and points connected with their improvement; the paper is, therefore, a useful supplement to that read before the same society in the summer by Mr. Baker, of Kew, which treated upon the botany of Cannas. The principal breeder of these plants in recent years, Monsieur Crozy, of Lyons, informed Mr. Paul that he began to breed them about twenty years ago with *C. Warscewiczii* and *Nepalense grandiflora*, and raised from them *C. Bonnetti*, a variety much appreciated at that time. Since then he has gradually improved the *Canna* in habit and size of flower, and by the time he raised and distributed the variety called *Madame Crozy*, one of the best ever raised, he had 1,500 seedlings from which he obtained many good varieties in nearly all shades of color. Recently he has paid special attention to the seedlings with shades of rose and carmine in the flowers, as well as white. Monsieur Vilmorin, Herr Pritzner and Mr. Paul himself have raised seedling Cannas, but he modestly disclaims having produced anything to rival Monsieur Crozy's seedlings. The value of Cannas for summer gardening is certainly very great. In England they have become a prominent feature in most good gardens, the London parks and Kew growing them largely. They are most effective when grown in large beds on lawns, and I think they look best when only one sort fills each bed. In greenhouses they are equally useful, and they grow and flower perfectly in a tropical house. The most effective plants I have seen were growing in the Victoria tank at Glasnevin last June, the perfect foliage and large richly colored flowers being charming over the water. Cannas are emphatically everybody's plants. Mr. Paul gives the following list of the best varieties hitherto raised. Crimson-purple: *Sophie Buchner*, *L. H. Bailey*, *Alphonse Bouvier*, *Miss Sarah Hill*, *C. A. de Choiseuil*, *Victor Hugo*. Salmon-red: *President Hardy*, *Professor David*, *Cronstadt*, *Souvenir d'Asa Gray*, *Thomas S. Ware*, *The Garden*. Crimson-yellow: *Henri L. de Vilmorin*, *Count de Ganay*. Yellow-edged: *Paul Sigrist*, *Marquisé d'Aigle*, *Admiral Gervais* and *Madame Crozy*. But the greatest advance, in Mr. Paul's opinion, is in the gains of the last two years in the new yellow-spotted varieties. The best of these are *Comtesse d'Estoule*, *Progression*, *Antoine Barton* and *L. H. Bailey*.

London.

W. Watson.

Cultural Department.

Spring Flowers.

A RED-FLOWERED variety of *Chionodoxa gigantea*, from bulbs collected last year, has been flowering sparsely with me, but the plants give promise of being a real addition to their class. The flowers are as large as those of the type, and in color are a deep flesh-pink, quite identical in tone with that of the pink-flowered forms of *C. Luciliae*, a few of which have previously found their way into cultivation. A nice colony of these would be very attractive in the border, and give a distinct effect in the early year, for which nothing approaches them very closely in color at this season. Perhaps the pink forms of the *Johnny-jump-ups*, *Dodecatheon Clevelandii*, of California, would produce the nearest color-effect. The latter, however, are not plants which are apt to be long-lived here, since they require dry summers.

It is one of the natural results of the present interest in the spring-flowering bulbous plants that new forms are becoming available both from careful search in natural habitats and also from hybridization and new seedlings. In various places crosses are being made between *Chionodoxas* and *Scillas*. *Chionoscillas* they are named, with much promise of attractive flowers. The Siberian *Scillas* are also breaking into new colors now that white and pallid forms have been found with which to work.

Iris rubro-marginata is the first dwarf-bearded *Iris* of the season. This little western Asiatic species is a very dwarf plant with closely clustered, evergreen sickle-shaped leaves about two inches long. It is a vinous-purple with brownish bronzy reflections. The prominent crest is dark blue. The fall is marked with purple veinings on a yellowish ground, and a very bright purple signal. It has broad prominent standards and narrow falls, which are curiously reflexed from the centre, or,

more plainly, perhaps, perfectly folded. The styles have a purple median line with a tint or suspicion of yellow. The specific name comes from the reddish margins of the leaves, although no such margins are to be distinguished on my specimens. This, as established, appears to be a free-flowering species with two-flowered spathes. It appears to be akin to *I. pumila*, but is earlier in flower, and while of a very quiet order of beauty, is handsomer than any *I. pumila* yet seen by me.

Iris Sindjarensis surprised me last week by putting forth new flowers, after I had supposed that its season was past. These flowers appeared from the nodes, and my previous observation that it differed in this respect from *I. orchoides* was incorrect. It certainly has maintained its habit of deliberateness, though the new flowers were very welcome and attractive.

Spring came in earnest one night last week with a gentle warm rain. The next morning it appeared that a miracle had been performed. The garden had been full of life before, but now it was full of vigorous joyousness, and the plants and flowers fairly reveled in the kindly change. It is humiliating to one's cultural pride to look at the changed aspects of a garden when nature suddenly supplies some genial impulse. Man never realizes how futile are his best efforts until his garden bursts out into such riotous life without any warning to him. And yet the annual recurrence of these transformations, so natural and yet so wonderful, is one of the assured pleasures which a garden of hardy flowers brings, and such experiences excite emotions which words cannot express, and suggest thoughts which one shrinks from spreading out in cold type.

Elizabeth, N. J.

J. N. Gerard.

Tulips.

IN a bed containing a number of species of Tulips, *Tulipa Kauffmanni* is the first to flower, and it is very distinct and beautiful. The large flower, borne on a short stem, is clear creamy yellow, with petals orange at the base, while on the outside they are bright crimson. There is no more distinct Tulip than this, and it is well worthy of cultivation where other species are grown. It should be more generally known that there are many of these Tulips that are both beautiful and hardy in the open ground, and that they will flower year after year when once planted. Of these we have the *Parrot Tulips* in quantity, *T. elegans*, *T. cornuta* (the *Horned Tulip*), *T. Greigi*, with prettily spotted leaves; *T. Gesneriana* and its many forms, *T. Oculus solis* (the *Sun's-eye Tulip*) and many others. We have several that are new to me, of which I hope to make note later.

The so-called *Darwin Tulips* belong to the late-blooming section, and they now look strong, with promise of good bloom later. Their chief value to us is that they come in so late in the season, and as they have very long stems they are useful to cut and put in vases for house-decoration. They are, if anything, hardier than the early-flowering section that are so much in use as bedding Tulips, and while the colors are not so gorgeous as those of the early single Tulips, they are much more varied and of softer hues. The term *Darwin Tulips* is of quite recent origin, though applied to a very old race of garden Tulips, heretofore known as *Breeders*, in the language of the old Tulip-fanciers. Once the value of these flowers is known, they cannot fail to become popular as hardy border bulbs, for in many respects they are capital plants for open-air culture in American gardens.

South Lancaster, Mass.

E. O. Orpet.

Notes from Baden-Baden.

THE season of bloom for bulbous plants began here as early as the first week of January, when a new species of *Colchicum* from Asia Minor made its lively appearance; its flowers are small, like those of a *Crocus*, but of a very pleasing rose-purple, and they appear from one up to fifteen, making quite a bunch of flowers; they endured seventeen degrees, Fahrenheit, quite unharmed.

Tulipa violacea, new to cultivation, and one of my introductions from Persia, began blooming about the first week of March. It is small-flowered, but the color is a brilliant magenta-red. After this flowered one of my best seedlings, a cross between *T. Kaufmanni aurea* and *T. Greigi*. This is one of the largest-flowered and most showy Tulips ever seen; the large, thick, leathery foliage is prettily marked, like that of *T. Greigi*; the flowers are of a splendid deep yellow, with some stripes of scarlet inside; outside they are deep red, with a yellow margin. After this came *T. Kaufmanni* in three varieties, all good early Tulips. Then followed *T. cuspidata*, *T.*

sogdiana, *T. lanata* and *T. Sintinisii*, which, on account of their earliness, are all welcome additions.

Among Snowdrops I find *Galanthus Caucasicus grandis* the very best; it is early enough, of purest white, and a most robust and healthy grower.

Muscari Freynianum must be named among the best Grape Hyacinths; it is a very large form of *M. lingulatum*, with turquoise-blue flowers. *M. Szovitsianum subcæruleum* is a showy variety with pale sky-blue flowers. *M. polyanthum*, with bright ultramarine spikes of very large size, I consider as one of the best of all. An ultramarine-colored *Bellevalia* was very showy, and is a most interesting plant, the broad leaves carefully close and protect the buds from frosts.

Fritillarias, although lacking in bright colors, are, nevertheless, attractive. The first to come out was *F. Raddeana*, from the slopes of the Kasbeck. It belongs to the *Imperialis* group, and has straw-yellow flowers of a different form from those of the type. This is likely to cause a revolution in the *Imperialis* strain when once it is carefully hybridized. *F. Kotschyana* affinis is a remarkably showy species; it is a dwarf plant with flowers two inches across of a dark vinous-red color, with paler markings. *F. alpina* is small, but very pretty, the bells being chocolate, with a bright yellow rim, and yellow inside. I am wondering what a new species will turn out from the Black Mountains in India. It belongs to the *Macrophylla* group, and has leaves an inch broad by nearly four feet long. Neither must *F. minor* be despised; I have here specimens two feet and a half high which attract attention by their sombre blackish bells. The Major form of *F. Meleagris alba* is a fine plant, some individuals having stems three feet tall.

Baden-Baden.

Max Leichtlin.

Chrysanthemums.

SPECIMEN plants are now well established in six-inch pots, and are plunged in sand in a cold frame and freely exposed during fine weather. Here they make healthy growth for the flowering season. A consideration no less important than an abundance of good flowers, is fine foliage well down to the pots. Plants which have been forced in a close atmosphere, or unduly excited by stimulants during the earlier stages, never finish well. We use only moderately rich soil and trust to the judicious application of stimulants when the pots are filled with roots, toward the end of August. Even then the amount and frequency of application is varied according to the needs of particular varieties. Some, like Hicks Arnold, G. W. Childs and Joseph H. White, can take stimulants two or three times a week, while Ivory and Cullingfordii are overdone with more than one application.

About the middle of May we shall transfer the plants to the blooming pots. Our soil is a rather light and moderately rich loam. Lime in some form should be an ingredient, and bone-meal, lime-rubbish or wood-ashes will supply this requirement very well. We pot light, as in the earlier stages there is less danger of overwatering, a risk to be carefully avoided, since a serious loss of foliage is sure to follow; and later, when stimulants are applied, the plants will become waterlogged, unless the drainage is good, an equally unfavorable circumstance.

Stopping is an important operation not generally well understood. No regular periods can be named for this work, but it should be done almost every day, as soon as a shoot is observed outgrowing the others. The idea is to keep the plants evenly balanced. It should never be necessary to stop a plant "hard," as the shoots do not thus break as well as when merely the tips are taken. Neither can any date be named to discontinue this operation. Golden Ball, Ivory, Duchess of Connaught, L. Canning and W. H. Lincoln naturally make good specimens, and need scarcely any attention after July, while G. W. Childs, Hicks Arnold, Mr. H. Cannell, Fascination, Cullingfordii and Mrs. W. G. Newitt should have run-away shoots stopped as late as the end of August. It need hardly be stated that a few stakes should be put about the plants to steady them against severe wind, and rain storms.

We always give all new varieties an equal chance with the tried kinds until their transfer into blooming pots; with the old varieties as a guide, we seldom fail in selecting from the new kinds those most suitable for specimens. The following new or recent kinds we shall give an extended trial: Iora, Mademoiselle Thérèse Rey, Amber Queen, Madame Octavie Mirabeau, Mrs. J. G. Ills, Sans Peur, Temptation, Eda Prass, Ernst Rieman, Achilles, Laredo, Prairie Rose, Major Bonnafon, A. H. Fewkes, Mrs. M. W. Redfield, Gloriana, Fascination and Clinton Chafaut. Duplicates of all the newer varieties rooted since distribution can be sufficiently tested in six or seven-inch pots and stopped to about ten blooms, and

many will make very neat specimens. Florists find such plants very salable; and plants of this size are convenient for keeping over for stock.

Cuttings for exhibition blooms should be put in at once, but for general decorative purposes toward the end of the month is early enough. Some florists, who have a good home trade for blooms of moderate size, find it pays better to root the plants in June. They are planted later, and correspondingly closer. The soft tips are preferable and should not be allowed to wilt, but should be put in, lot by lot, and well watered and shaded.

Cuttings should be kept saturated and shaded in the daytime, but aired at night for about ten days, when they should be in a fair way for rooting. But even then they should not be allowed to wilt. When rooted, it has been our practice to pot into three-inch size, but a very successful grower, Mr. Brydon, of Yarmouthport, Massachusetts, tells me he has better success by putting them in flats, as they can be moved with their roots in better condition for taking hold of the soil than when they are pot-bound. We shall give his plan a trial. We use the same compost as for pot plants and feed them much in the same way. For exhibition blooms ten inches apart is not too much to allow; for later planting less will do.

Wellesley, Mass.

T. D. Hatfield.

Caladiums.

AMONG greenhouse-plants grown for their foliage alone none are more beautiful than the ornamental-leaved Caladiums. They are most serviceable as house-plants during summer, as they last well, and do not require the constant changing that flowering plants do when used in the dwelling-house. The more recent varieties of Caladiums, known here as the Brazilian kinds, are most beautiful, and I never remember seeing better ones than those exhibited at Chicago last year. Some of the sorts have little green in the leaves, the texture being thin and transparent, delicately tinted with rose-color on pale creamy white grounds. These are very handsome, but liable to injury by exposure to the direct rays of the sun in the greenhouses. In Florida, I am told, these plants are hardy, and it seems that where Crotons can be used as summer bedding-plants, Caladiums may also be expected to do well and to make a good effect, if given a shady position and rich moist soil. In this state neither the Crotons nor Caladiums are a great success as outdoor plants, and cannot be grown as I saw them in Washington last year, where, in the Botanic Gardens, they were as happy outdoors as they are in greenhouses here. The nights are too cool here, even in summer, for them to be used successfully to any great extent.

This is a good time to obtain good dry bulbs of these plants if they can be started in a nice warm house and be grown on without a check. But if a good heat cannot be had early in the year, it is better not to start them until later on. A rich light soil is desirable; loam and the material from a spent Mushroom-bed, made porous with sand, makes a rich soil that these plants delight in. They will be greatly benefited by manure-water later in the season. In the fall, when the leaves begin to decay and show signs of ripening off, is a critical period, and the plants then require the same careful attention or the bulbs will not ripen properly. They must have a good sunny position, even when no longer ornamental and when all the leaves have died off. I find it is best to shake the bulbs out and store them away in dry sand in a warm place. Last year they were put in the boiler cellar, and they came out in fine condition this spring. A temperature below fifty-five degrees for any length of time is fatal to these highly colored and delicate varieties of later introduction.

South Lancaster, Mass.

E. O. Orpet.

Double-flowered Nelumbiums.

THE list of cultivated varieties of *Nymphæa* in this country has been increasing very rapidly for some years. This has not been the case with *Nelumbiums*. Besides our native *Nelumbo lutea*, only four or five desirable kinds are found in our gardens. Beautiful double-flowering varieties undoubtedly exist in Japan, but they seem difficult to obtain. Very soon after I began to make aquatic plants a specialty I made strenuous efforts to add them to my collection. Many times I have imported tubers, but on flowering they proved to be single, and no improvement on those already in cultivation. I have seen the statement somewhere that the Japanese are loath to send their best varieties of these plants out of the country. My experience would seem to show that there may be some ground for believing this to be true. A few years ago I obtained some seeds from the collection of an American amateur in Japan, and among many seedlings raised from these

two really double-flowered forms appeared, which have been flowering for several seasons. They are as hardy, robust and free-blooming as the single-flowered varieties. One is pure white, with a hundred petals of all sizes, while still showing the seed-receptacle and many yellow stamens in the centre, relieving it from that stiffness and formality which is sometimes the fault of double flowers. The second variety has eighty petals of a bright deep rose color, similar to that of the Rose, Paul Neyron, the nearest approach to red of any variety in cultivation here.

They form a pleasing variety which will be appreciated by all who are making collections of these plants and other aquatics.

Los Angeles, Calif.

E. D. Sturtevant.

The Vegetable-garden.

THE genial weather experienced for some days past has had a quickening effect on the vegetable-garden. Peas and other early seeds, which remained in an almost dormant state during the first half of April, are now growing rapidly. The expectations of an early spring, however, will not be realized, as vegetation was more advanced a year ago to-day than it now is. Peas, when through the ground, require careful hoeing. Break the soil up fine, so that in two or three days they can be quickly and efficiently molded up. In molding up earlier rows care should be taken not to draw the soil tightly up against the plants nor too high. The proper practice is to draw it up so as to form slight ridges on both sides of the rows in such a manner that the tender young plants are in a slight hollow between them. When fine soil is drawn up in this way the crumbs which roll down toward the base of the plants will be sufficient for absolute contact with them. Successional sowings of Peas should be made every ten days at least, and main-crop sorts, such as Champion of England, can be put in at the same time as the earlier varieties, which will be cleared away before the others come into bearing. After this date a moister piece of ground should be chosen than was needed for the earlier sowings.

In this section we do not find it safe to sow String Beans before the middle of May; if an early picking is desired, one or two hot-bed sashes may be utilized for the purpose. Early Mohawk and Red Valentine we have found serviceable kinds, for successive sowings throughout the season, the last-mentioned being the favorite. Additional sowings can now be made of Beet, Parsnip, Turnip, Carrot, Salsify, Chicory and herbs in variety. Among Lettuces, we have found Satisfaction and Black-seeded Tennis-ball the least likely to run to seed prematurely in hot weather. A sowing of Cos Lettuce and Endive may also now be made. If possible, a moist and partially shaded piece of ground should be allotted to Lettuce. The finest heads are obtained from frames where abundance of water can be given. It is an excellent plan to remove the sashes altogether after the middle of May and run lath shadings over the plants during the heat of the day.

Tomato-plants should have ample room, so that they will not become spindly. A cold frame is the best place for them after this date, although we cannot with safety plant them out before May 20th in this latitude. Stout and stocky plants should always be ready to start with. Egg-plants and Peppers, if planted out in a moderately warm frame, will make excellent plants by the third week in May. Sweet-potatoes are grown but little in this state, but last season Yellow Nansemond proved quite satisfactory; slips ought to be put at once into a gentle hot-bed, if not already started. A light sandy soil suits Sweet-potatoes best, and the slips ought to be planted on ridges, a few inches above the ground-level; the beginning of June is as early as we can set them out here. Muskmelons and Cucumbers, started in bits of turf about four inches square in a hot-bed, and planted out under hand-lights about the middle of May, will give much earlier fruit than plants from seed sown out-of-doors. For outdoor sowing, if small frames or hand-lights are not at disposal, sheets of glass laid over the hollowed space containing the seeds will help them on materially. Before Celery-plants become crowded in the boxes into which they have been pricked, they should be planted out in frames. Three or four inches of rotted manure, with a dressing of fine loam over it, will suit them admirably, and they should have copious watering. When transplanted to the open ground the plants can be lifted with large balls adhering to them, which is impossible when they are planted hap-hazard in any ordinary compost which the sashes may happen to contain.

A sowing of Brussels Sprouts should be made early in May. This excellent vegetable is not nearly so much grown as it should be. At the same time additional sowings may be made

of Cabbage and Cauliflower. A pinch of dwarf green Curled Borecole ought not to be omitted; this is the hardiest of the Brassica family, and stood the past winter without any protection here. A very useful vegetable at this season is the Leek. Musselburgh is the best variety, and the present is a good time to make a sowing of the same. Early planted Cauliflowers should be well watered in dry weather, or many "buttons" will be the result. About May 10th we make our first sowing of Sweet Corn, first crop Sugar and White Cory being the kinds used. As soon as Onions can be traced in the rows clearly, the hoe or hand cultivator should be used to stir the soil, and this treatment should be given to all early plants. Frames will need constant attention in watering and ventilating at this season, as a few minutes of neglect may be the undoing of days of patient labor.

Taunton, Mass.

W. N. Craig.

Correspondence.

Notes from North Carolina.

To the Editor of GARDEN AND FOREST:

Sir,—Referring to Mr. Joseph Meehan's list of shrubs in bloom in Germantown in April (see page 160), and comparing it with the season in Boston, you properly say it is very difficult to make a calendar for our big country. *Lonicera fragrantissima*, which Mr. Meehan reported in bloom, begins to flower here soon after Christmas, and perfumes our lawns all through January and February. The mildness of the past winter is shown by the fact that the Birds-foot Violet, which usually blooms here in March and April, and, in fact, is still blooming, began to show flowers on the sunny sides of the woods early in January. The naked flowering sorts of *Magnolia* were all in gorgeous bloom here when the March freeze closed them out for the year. *Wistaria Sinensis* was at its best at the same time. *Jasminum nudiflorum* gave us most of its flowers in January, and the Japan Quince was blooming by the last of the same month and kept it up into March. *Pyrus coronaria* was superb when the freeze struck it. How we wish our Peaches had been "just opening their flowers" in April. The poor things had fruit set on them when the ice came.

Every spring's experience satisfies me that it is wise here never to prune Grape-vines until March. True, they bleed, but this is trivial compared with the damage a late freeze may do. Vines pruned last fall and early in the winter pushed strongly and were unfolding tender leaves at the time of the late freeze. In a vineyard of 20,000 vines we deferred the pruning until middle of March. The buds were hardly swollen when the cold came, and the result is slight injury.

One of the most showy shrubs in bloom when the cold came was *Zanthoxeras sorbifolius*, a shrub seldom seen, but far superior to many of the *Spiræas*. Its flowers are borne in long racemes, white, with reddish centre. The finely cut foliage is suggestive of our China-trees. The freeze destroyed its flowers, of course, but the foliage proved very resistant and now looks as handsome as ever. One of the most reliable of the rather tender shrubs here, which usually escapes damage from spring frosts, because it persistently refuses to start until the weather is settled, is the *Cæsalpina*, which, later on, gives us a profusion of its showy yellow flowers with protruding red anthers. These shrubs are much more hardy than is generally supposed. Though injured, they survived the cold of January, 1893. The older trees of *Sterculia Platanifolia* lost many of their upper shoots at the same time, and were so pruned by the cold as to give them a scrubby top while leafless. The younger trees seemed to escape better. This extremely rapid-growing tree forms a striking object, either in foliage or leafless, because of the smooth greenness of the bark, even on quite old stems. The people here call it "Japan Varnish-tree," and also call the *Paulownia imperialis* the "Cotton-tree," because of the resemblance of its seed-vessels to the unopened ball of cotton. Just now this tree, too, is clothed with flowers. *Albizia Julibrissin* has completely run wild with us. I stumbled on it all through the field and woods, and near the city the *Paulownia* is nearly as plenty. *Eichornia crassipes* has survived the winter in our open pond, and just now seems to be the favorite breeding-places for the young of the dragon-flies, which swarm in the water about their roots. We always keep a few of these Water Hyacinths over in the greenhouse in tubs, to guard against loss, and transfer them to shallow water in the pond in spring. They bloom better, however, when crowded in a tub than in the pond.

Some time since GARDEN AND FOREST mentioned that I had urged the use of galvanized wire-netting for Peas five

years ago. I would add that the netting I then used is still in use and looks as good as ever. I would not allow any one to use the unsightly pea-brush in my garden, if done without cost to me. The netting cost three-fourths of a cent the square foot over five years ago.

Raleigh, N. C.

W. F. Massey.

Notes from a Missouri Garden.

To the Editor of GARDEN AND FOREST:

Sir,—The worst spring "backset" ever known in southwest Missouri has passed away, leaving me more firmly convinced than ever of the value of our wild plants for domestication in the garden. After the icy weather was over, I took a two-days' journey over parts of this and the adjoining county of Benton, in northern Arkansas. Everywhere was evidence of serious damage. One-third of the Peach-trees were killed outright, the too-forward leaves of the Crab-apples, Lilacs and Roses were still clinging to the bushes, crisped as by fire, and early gardens were practically ruined. From the time we left Oak Lawn behind us, until we reached home again, we saw not a solitary cultivated flower, excepting those in windows; and yet the woods and valleys were gay with bud and bloom. There were various species of Violas, Phlox, Dicentras, Delphiniums, Claytonias, Polemoniums and Anemones, together with budding Dodecatheons, Camassias and Aquilegias, varied and plentiful enough to have made beautiful every one of the empty, frost-scorched yards we passed. How many so-called garden flowers have we that would endure such hardship as these wildings have done and yet show no trace of suffering? Of course, we must have the Holland bulbs, which make rainbows of our early gardens, and many other beauties from abroad; but these sturdy natives, if less showy, are not less charming, and they add a touch of home poetry to the spring garden which, to me, seems indispensable. And how easy it is to get them! A trip to the woodland or meadow—itsself an occasion of delight—a few moments' work with spade or hoe, and a basketful of plants is secured that will blossom in next spring's garden with such frost-defying exotics as Scillas and Chionodoxas and Saxifrages.

Pineville, Mo.

Lora S. La Mance.

Secium edule.

To the Editor of GARDEN AND FOREST:

Sir,—I read with interest your note on the Chocho, *Secium edule*, in No. 321. Another popular name of this fruit in tropical countries, where it is much grown, is Chayota, and in Louisiana it is commonly known as Vegetable Pear. An interesting fact not mentioned in your note is that the fruit often germinates before it drops from the vine, or after it is gathered and laid away. The blossom-end opens a little, and a strong shoot comes forth that will grow several inches in length before withering. In propagating, the whole fruit is planted, preferably one that has thus sprouted.

A correspondent in Baton Rouge, Louisiana, has grown this vegetable for a great many years, and first called my attention to it. She mulches the old root in the fall, and in the spring it sprouts up vigorously and fruits freely. I have tried it two or three times in this state, but each time the vine withered and died before reaching the fruiting-stage, and suddenly, as if attacked at the root by some insect. A neighbor had better success with it, raising a vine which produced a quantity of fruit; but it failed to appear above ground the second year. Perhaps the light sandy soil of this state is not so congenial to it as a heavier one. The fruit, cooked in the same manner as squash, was equally as palatable. If it can be depended upon to grow and fruit in this state it would make a very valuable addition to our vegetable gardens.

Jessamine, Fla.

Walter N. Pike.

Recent Publications.

Landscape-gardening in Japan. By Josiah Conder. Kelly & Walsh, Yokohama, and Charles Scribner's Sons, New York.

The author of this work was for some years Professor of Architecture and Architect to the Imperial Japanese Government, and he has, therefore, had exceptional facilities for studying the different phases of Japanese art. One of his books, entitled *Flowers of Japan and the Art of Floral Arrangement*, is, altogether, the best English treatise on a subject in which the Japanese are recognized masters. Something like a year ago the first volume of the present

work appeared, and it was reviewed in vol. vi., page 418, of GARDEN AND FOREST. We there explained that the present school of landscape-gardening in Japan has hardly anything in common with our own ideas of the art; that the Japanese gardeners do not attempt to reproduce natural scenes, but to arrange natural and artificial objects with a view to their symbolical and ceremonial significance; and inasmuch as western nations are ignorant of Japanese traditions, we can have no clear idea of the esoteric meaning of a garden which to an educated native may speak in intelligible language of poetry, religion, philosophy or history. To our un instructed eyes there is little that is restful in the multiplicity of detail in these gardens, and little that makes appeal to our imagination either in the way of pleasing motive or of broad and dignified treatment. Nevertheless, the reader will find very much in the subject to interest him by its strangeness and novelty, and much that will enlarge or modify his conceptions of the nature and functions of Japanese art. He will find, for example, a long chapter devoted to stones, their sex (for most inanimate objects in Japanese gardens are either male or female), their nomenclature and symbolism. He will gather few ideas which he can make use of in our own gardens from this chapter, or from others, on lanterns, pagodas, water basins and wells, but he will see that to the Japanese there is a profound meaning in what he would consider trivial. But, on the other hand, he will find accounts of arrangements which are beautiful in themselves apart from their symbolic significance; and in the figures where stepping-stones are used instead of gravel walks, in the chapters on gates and enclosures, in the illustrations of neat and trim bamboo fences he will find many devices which he would like to transplant into our own parks and gardens.

What we have said applies exclusively to the art of gardening as at present practiced in Japan. In former years there were gardens there designed either by Chinese artists or by Japanese who were under Chinese influence which are still models of beauty as we understand it. Mr. Conder has written comparatively little about these parks, because they are not distinctively Japanese, and a treatise on their artistic qualities and value would be a discussion of the canons of the best landscape-art as it is found in America and Europe. Again, the diagrams and illustrations of the first volume, which are taken from Japanese works, while they are adequate to aid in explaining the text, are too coarse and rude to set forth the refinements of natural scenery.

Readers will welcome, therefore, what is really a second volume of Mr. Conder's work, but what is called a supplement to his original treatise. This volume is a collection of excellent heliographic plates reproduced from photographs of garden-scenes by Mr. K. Ogawa. The scenes illustrated in some of these plates are described in the earlier volume, but all the pictures in the new volume are accompanied by good descriptive text. Among them are some beautiful examples of natural scenery as well as typical illustrations of the best garden-work of the earlier and better style of the country. All of them are interesting and well executed, but some of the garden scenes can hardly be called beautiful subjects, while in a few instances the lines of certain architectural features and the stone margins of artificial water make a singularly disagreeable impression. The volume, however, is of itself a beautiful work of art, and it is a most helpful supplement to the original text. In reality it broadens the scope of the work, so that it covers a region which the native drawings could not illustrate, although they are perfectly competent to explain the technical matter of the earlier volume. The two volumes taken together form the most complete and satisfactory treatise in our language which has yet been attempted on Japanese gardening; and this means a great deal, for, as we have before said, these people, so remarkable for a subtle perception of beauty, find in their gardens the truest expression or reflection of their own character and its limitations.

Notes.

The variegated form of *Evonymus radicans* has been considerably used of late years for covering walls, but the green-leaved form, trained to a fence or climbing up a rock, is much more beautiful, especially when it is planted in good deep soil. It then makes a luxuriant growth, and its bright foliage and early flowers are very effective.

During the present year and in former volumes we have often spoken of the beauty of *Iris orchoides* as a spring-flowing plant. A dozen of them planted last year are still making a beautiful show in the Daffodil season. The bright yellow flowers are held up on stems a foot or more in height, and the foliage is broad and vigorous, so that the whole plant has an appearance of sturdy vigor which some of the earlier species lack.

Just now the large, yellow, ball-like flower-clusters of *Berberis* (*Mahonia*) *Aquifolium* are very effective, and specimens in Prospect Park, Brooklyn, attract much attention from visitors. This is a hard climate for broad-leaved evergreens, and the foliage of this *Mahonia* often turns brown in the winter, but when planted in this latitude, where it is shaded from the sun in winter, it usually does well, and when planted in a southerly exposure a few evergreen boughs or some similar protection is advisable.

It has always been a matter of discussion whether or not it is best to take out the fruiting wood from Raspberry or Blackberry plants as soon as the crop is off. It has been generally argued that the old canes are rather a detriment to the new ones, since they crowd them and do not allow free development of the plants, and that the old wood can hardly have any value after the fruit is off, and perhaps weakens the plant by taking from the soil the nutriment needed to ripen it up. An experiment was made last year at the Illinois station, in which the old wood was left in one row until spring, while the corresponding rows on each side of it were cleaned out in the usual way. The result of this single trial was that the first row yielded seventy-three quarts of good fruit, while the rows from which the old wood had been taken out a year before yielded forty-one and forty-eight quarts respectively. This points to the probability, at least, that the old, but living, canes are of some advantage to the new growth.

In one of his letters from the Columbian Exposition to GARDEN AND FOREST, last year, Professor Bailey stated that the display of vegetables made by the state of New York was the most varied and interesting of any in Chicago. It was supplied by the State Experiment Station at Geneva, and an interesting bulletin, prepared by the horticulturist of that station, gives the methods in which the vegetables were grown and shipped. The record is made still more interesting by the fact that the different varieties of the various vegetables are tabulated alphabetically, with accurate notes as to their earliness, productiveness, quality and other points of excellence. In the special details for cultivating different vegetables many excellent hints about methods for preparing the soil, training the plants, fertilizing, protecting against insects, preparing the vegetables for exhibition by blanching, etc., are given, so that the bulletin, which is numbered 69 of the new series, is really a valuable little manual for the vegetable-garden.

A hundred acres of Sweet Peas, making a sea of beautiful color and gales of sweet odor, is what the visitor finds on the estate of Mr. Timothy Hopkins, Menlo Park, California. Sixty-four distinct varieties are raised here for seed this year, and the business is constantly growing. Obviously, if Apple Blossom, or Captain of the Blues or any other given variety, was grown last year, the same variety must be planted this year on the same ground in order to ensure constant purity of the stock, for volunteer plants will come up in great numbers the next season. If one acre of Apple Blossom was grown last year and two acres are needed this year, new land which has had no other variety of Peas on it must be occupied, and therefore a grower who expects his business to increase must arrange his sowings for several years to come. From that part of the Pea-farm which is devoted to supply the market with flowers, these are cut every day and the plants are kept in bloom for months in succession. The flowers on the plants which are raised for seed, however, are never cut for market, but are left until the pods ripen when the plants are cut and threshed by horse-power.

The effect on strawberries of the cold weather several weeks ago is felt in their scarcity and consequent high price, and it

is not expected they will sell at popular prices until the ripening of the crop north of Maryland and Virginia. As with vegetables, strawberries from the far south are out of favor and bring comparatively low prices. A common price for good berries from Charleston and northward has been thirty-five cents a quart box, and the best seen here this year, from Virginia and Maryland, on Saturday sold at fifteen cents above this price. Late holdings of selected Catawba grapes, packed in three-pound boxes, cost twenty-five cents, and their freshness and flavor are surprising. The last California Easter Beurré pears were in high favor, as much as ten dollars a box being offered for them last week. Large supplies of winter-green berries are noted in some of the fruit-stores. These come from remote parts of the New England states, and besides being eaten out of hand are in some demand for sauce. They sell at the low price of fifteen cents a quart.

In a recent article on the fruit and vegetable trade it was stated in the *Journal of Commerce and Commercial Bulletin* that New York is in all probability the greatest fruit and vegetable market in the world. It is so much the largest city in this country that it is unnecessary to examine the statistics of its trade in these articles of food. In the Old World there are larger cities, but their people do not eat anything like the amount of fruit that we do, and it is only necessary to recognize these general facts to reach the conclusion that nowhere else in the world is there anything like the traffic in fruits and vegetables, especially early vegetables, that there is here. This view is certainly borne out by the profusion and variety now seen in our markets. Among northern winter vegetables, parsnips, carrots, beets, cabbage, salsify, Brussels sprouts and turnips are still abundant and cheap, while Kalamazoo celery may be had for twenty-five cents a root, and Vineland sweet-potatoes at \$6 a barrel. Of the spring vegetables, asparagus was, last week, in greatest abundance in the markets. An experimental shipment of this vegetable from California showed little deterioration from the three-thousand-mile journey, beyond a suggestion of being water-soaked on the cut ends, and the quality was fair. It sold for twenty-five cents a bunch. Asparagus is now coming from all the coast section north of Charleston. Large stalks from Virginia and New Jersey bring as much as forty cents a bunch. The first few small bunches of tender shoots from Oyster Bay, Long Island, sold quickly on Saturday for seventy-five cents each. Boston hot-house cucumbers maintain the price of the past three months, the best selling for fifteen cents each. Mushrooms are now plentiful at fifty cents a quart. Hot-house tomatoes sell at forty cents a pound, a higher price than they would bring so late in the season but for the small supply of first-class tomatoes from southern gardens. The latest addition to the large variety of new crop vegetables from the south are turnips from North Carolina, and flat and crook-neck squashes from northern Alabama. Large and fully ripened Florida tomatoes are twenty-five cents a quart, and a poorer quality may be had at ten cents for a box supposed to contain that quantity. A choice quality of string beans of the green and fancy wax varieties, brought through on express trains, are altogether superior to those shipped on steamers, and bring correspondingly higher prices. Peas, while quoted at wholesale at a considerable advance over the price for Florida peas several weeks ago, continue to sell at the same retail price, one dollar a peck. The first cargo of Egyptian onions arrived last week; although of harsh flavor they are useful here during the six weeks between the close of the Bermuda onion season and the marketing of the eastern-shore crop. The Egyptian onions are remarkable for their keeping qualities, remaining in good condition in the warehouses for three and four months of our summer weather, and some of them held over in cold storage since last spring are still in sound condition. The five hundred and odd sacks of 112 pounds, already sold, brought \$3.25 apiece. As many as 5,000 sacks will arrive during this week, so that this high price is but temporary.

Mr. Myron A. Hunt, after a long period of ill health and suddenly overwhelmed with grief on account of his wife, who had just been pronounced incurably insane, took his own life last week at his home in Terre Haute, Indiana. Mr. Hunt was one of the most successful and respected florists of the country, and had been for ten years Treasurer of the Society of American Florists. His book, *How to Grow Cut Flowers*, is especially valuable as a record of his own experience, and a revised edition of it has lately been published. Mr. Hunt was a man of high principle, modest, generous and true. He was born in Sunderland, Massachusetts, in 1838.

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A Botanic Garden for New York.

THE Legislature of this state which has just adjourned added certain amendments to an act incorporating the New York Botanical Garden in 1891, and the men interested in this project are now able to go forward and provide for the establishment and maintenance of what is called in the act "a botanical garden and museum and arboretum for the collection and culture of plants, flowers, shrubs and trees; for the advancement of botanical science and knowledge, and the prosecution of original researches in these and in kindred subjects; for the prosecution and exhibition of ornamental and decorative horticulture and gardening, and for the entertainment, recreation and instruction of the people." The garden is to occupy grounds not exceeding 250 acres, either in Bronx Park or in such other of the public parks north of the Harlem River as may be agreed upon by the Park Board of the city and the Board of Managers of the Botanical Garden.

The work of constructing and governing this institution is ordered somewhat on the plan adopted in the case of the Museum of Natural History and the Museum of Art—that is, after the corporation have raised not less than \$250,000 for carrying out the objects of the enterprise, the city is to provide grounds and furnish suitable buildings according to plans approved by the Trustees of the garden. For police purposes and for the maintenance of roads and walks, the grounds shall be subject to the Park Board, but for other purposes the buildings and grounds shall be under the control of the Trustees, who shall make such restrictions and regulations as to the cultivation and preservation of the garden as may be required. Four members of the Faculty of Columbia College, the President of the Torrey Botanical Club, the President of the Board of Education in this city, and certain other members who may be added by a majority vote of this Board, shall be known as scientific directors, and shall have power to appoint a director-in-chief, and shall be responsible for the scientific conduct of the institution, while the financial and business management of the corporation is subject to the control of a larger board, consisting of the scientific directors, the

Mayor of the city of New York and the President of the Park Board, and nine other members elected by the corporation.

Of course, \$250,000 is a sum altogether inadequate to establish or to conduct a botanical garden worthy to be named with the garden at Kew, for example. To design and plant an arboretum with accompanying shrubberies, to establish and maintain collections of hardy herbs of all sorts from alpine plants to aquatics, to fill glass houses with representatives of the flora of the tropics, and in the mean time to develop a museum, a library, and, most of all, a comprehensive herbarium, will require a great deal of money, even when it is administered with the utmost economy. This is by no means an insurmountable difficulty, however, for there are New York merchants and bankers whose names are synonyms for public spirit, and if the garden once shows itself to be worthy of the metropolis of the New World, its support will be assured. Whether it will ever become an institution of that rank depends primarily upon the quality of the man who takes it in charge and leaves upon it the imprint of his ideas and character. The library and the museum and the herbarium at Kew have grown to their unrivaled size and value because when Sir William Hooker was invited to manage it all the world knew that its scientific character was assured, and it attracted gifts from all sides. The spirit and temper of its early management were continued during the rule of the second Hooker and still prevail under the present director, until the atmosphere of the place, its traditions and tendencies all help to make it easier in the future to keep on the highway of progress.

We may hardly hope to secure a man with such a world-wide reputation as a botanist as the first director of Kew, but we ought to have one with the same consuming zeal, with equal industry, with a scientific habit, and an integrity of character which inspires the confidence of all naturalists. There will be innumerable temptations and difficulties in the way of proper management. The director will be assailed with clamor to make it a pretty flower-garden at all hazards; he will be criticised because results are not produced immediately which it takes the labors of years to perfect. Unless the city government becomes regenerated politically, the power and influence of the city officials in the Board will be dangerous, and will tend to cripple the action of the director in a hundred ways. The hope of the garden is that some young man may be found who is willing to endure hardship for a time; who understands that an herbarium and a library are of more importance than a flower-show; who has a scientific conscience and executive force, and who holds an unwavering purpose and is willing to wait for the fruit of his labors. If the garden becomes what it should be it will cost more than money; it will cost patience, self-sacrifice, and, it may be, practical martyrdom for an idea. We do not say these things to discourage, but simply in the hope of bringing its projectors to a thorough realization of the fact that the enterprise which they have undertaken is a most serious and complicated one. Its development, if healthy, must be slow and expensive, and unless they thoroughly understand these things before they begin they will be likely to grow weary and discouraged, because success will seem so far away, even after they have done their very best.

Referring to the belief usually cherished in England that the American is a very prosaic, merely money-hunting creature, an English writer recently said in the pages of *All the Year Round* that, as a corrective for this belief, he would especially recommend an examination of "the American House Beautiful," in the honest conviction that no absolutely prosaic mind could find pleasure in beautiful surroundings. The writer continues:

We Englishmen are proud, and justly so, of the stately and the cottage homes of our land. There is nothing like them elsewhere in the world, for they possess peculiar features of their own—the former in their antiquity and their associations

the latter in their own beauty and that of their surroundings. But the great mass of us live neither in stately homes nor in cottages, and of our residences—externally, at any rate—we have very small reason to be proud. Now, as the Americans have no stately homes of our English type, with the exception of the fine old colonial residences of Virginia and New England, and as their cottage homes are modern, practical, and consequently ugly, and, as we have said, there is a wealth of refinement in many American minds, they have succeeded in making the villa residences of their big city suburbs the most beautiful in the world.

In a survey of these the first fact which strikes the eye of the stranger is the extraordinary fertility of the American architectural brain in original design. A family likeness pervades all London suburban houses, be they north or south of the Thames. If there be one pretty house, there will be scores exactly like it all around; but until within the past very few years the London suburban builder reared as fast, as cheaply, and, in consequence, as inartistically as he could, with the result that the very great majority of London suburban houses are absolutely hideous. But in an American suburb, let us say, for example, Brookline, near Boston, a suburb extending over miles of hill and dale, and planted thickly with houses, it may be asserted that not half a dozen buildings are exactly alike. The straining after the original and the striking has, of course, resulted in the erection of a few monstrosities, and of some houses more eccentric than pleasing in design, but the general average is exceedingly high.

After we have surveyed the exteriors of the houses and proceeded to their interiors, another new fact strikes us, and this is how very much better the different classes of American business men are housed than are their corresponding grades in our own country. Shop-walkers, counter-men and good artisans go home every evening to houses which, in England, would not bedemean unworthy of city men of good position. The taste in furnishing and decoration may not always be as good as the houses themselves, but there is nothing corresponding to what may be called our London "genteel villa residence"; and the bank clerk, instead of huddling in one yellow-brick box in a long row with a big name, shuts himself up for the evening in his own little detached castle, which contains, on a small scale, all the accommodation and many more of the conveniences of an English gentleman's house.

American Apple Exports.

THE apple export trade from this country to England is by no means a new business, for as long as fifty years ago lots of a hundred barrels and upward were sent forward in sailing vessels that took from four to eight weeks to make the voyage. Ten years later slow steamships landed the fruit in from eighteen to twenty-five days, though not always in sound condition. Until 1870, 500 barrels of apples were considered a large shipment, but since 1875, with swifter steamers, the business has greatly increased, and is now a regular department of the fruit trade in which some fifteen firms in this city are engaged, besides half a dozen shipping brokers who see to arranging for space on the steamers and attend to other details of transportation. In 1880-81, a season of good crops, the enormous quantity of 1,159,380 barrels went to Europe from United States ports alone. The carefully compiled reports of Mr. Mahlon Terhune, of this city, for the years since 1880, show great variation in the quantity of yearly shipments, the result of abundant or short crops. For example, in 1892-93, more than 650,000 barrels were shipped from New York, Boston and Portland; of these apples almost 250,000 barrels, or nearly thirty-eight per cent., were grown in Canada. The shipments made direct from the Canadian ports, Montreal and Halifax, amounted to nearly 546,000 barrels.

The apple export season dates from August to May, and from advance-sheets of Mr. Terhune's statistics of shipments for 1893-94 it appears that the minimum quantity of less than 70,000 barrels went out from the United States this season, and but 86,000 barrels from Canadian ports. These figures indicate, with the single exception of 1883-84, the duller apple trade in twenty-five years. Reasons for this unusual export market are found in a short crop, made still smaller by the heavy storms of last autumn, large im-

portations to England from other countries, and the prevailing hard times. These exports, although comparatively small, were large enough to diminish appreciably the stock already insufficient for home use, so that prices have ruled unusually high in this market.

The first apples are shipped abroad about August 1st, Keswick Codlins, from New Jersey, being the earliest export of last year. The Orange Pippin, a better fruit, follows closely, but the export of these tender summer apples is always attended with risks, and as they are needed at home, shipments are likely to continue small. During the year almost every variety of American apple is exported, and Fameuse and other delicate apples stand the journey well, Red Astrachan being one of the few kinds which rarely arrives on the other side in good condition. Red-skinned apples are preferred in England by the masses, and the attractive King apple is in especial request early in the fall. But there are not enough of these, and in recent years Greenings, which come into market about the same time, have gained a place in spite of their inferior color. But the great export apple is the Newtown Pippin, the first American apple shipped to England. Coming originally from orchards in Newtown, Long Island, the best of these apples are now grown in the mountain districts of Virginia, where they are locally known as Albemarle Pippins. Here the fruit matures early and is ready for shipment by the 10th of November. These Pippins, grown on Long Island and in the Hudson River district east of that river, mature later and are not fully ripened and well-colored before January. On this side of the continent Newtown Pippins are grown only in the sections indicated. But the northern orchards are dying out, and efforts at propagation are not successful, and the fate of the Spitzenberg twenty years ago threatens this fruit. Westchester County, formerly a great centre for these apples, now produces small scaly fruit, and it seems to be only a matter of a few years when there will be none of these apples grown in the north. It has been thought by some that if the trees were not started from root-grafts, but were grafted high up on some vigorous seedlings, they might once more succeed where they are now failing. In the Virginia district the fruit grows large and of excellent quality. In New York state three heavy storms last autumn cut prospective orchard harvests of fifteen hundred to two thousand barrels down to a few hundred barrels, but in Virginia the damage was slight and the crop was large and of the good quality which attends a full-bearing season. Quite as many Newtown Pippins went abroad, all Virginia fruit, as in other recent years, and at paying rates, prices in England ranging from 25 to 40 shillings a barrel for No. 1 fruit. They are largely used for table-decoration there, and their rich flavor commends them highly, while they have also the crisp and sour qualities demanded in the English market. Their firm flesh and tough skin especially adapt them for packing and shipment, whereas many kinds, such as the Northern Spy, are easily bruised and discolored. The Newtown Pippin is much better known in England than it is here, since nearly the entire crop is exported. Christmas presents of these apples have long been fashionable, and banking firms in this city send abroad sometimes as many as 50 barrels to their business friends. More Newtown Pippins were offered in our markets this season than ever before, owing to the scarcity of other apples, but these were mostly second-rate fruit from this state and culls from Virginia, which in ordinary seasons would find no sale here. The stock of Newtown Pippins is always exhausted by March, and this year exports practically ended with the holiday trade.

Among the latest apples usually shipped are Northern Spies, which remain juicy and highly flavored to the end of the season and are sought after by the best trade. More Baldwins are usually shipped than of any other sort, and these are even later keepers. It has been said of Russets that they are an instance of the survival of the unfittest, but their merits are appreciated by a large number of buyers, and this apple ranks fourth or fifth in quantity ex-

ported. It is the longest keeper of all American apples, and is often shipped in April, while it has been sent to Glasgow and to English ports as late as June.

The firm prices which continued in England until February were then broken by large receipts from the Continent, and the demand for such American apples as were still held there was also affected by large receipts from Australia and Tasmania. The bulk of supply in England is, however, drawn from Canada, some of the best apples coming from Nova Scotia. These are of a quality superior to those grown in the United States and have remarkable keeping qualities. Transportation to England costs hardly more than freight into the United States, so that English markets stand the first chance with Canada shippers, especially as there is also a duty of 84 cents a barrel on apples brought from Canada into this country. So large a supply of Canada apples found their way to England last winter that prices were often \$1.00 a barrel less than the same fruit brought here. The average wholesale price for apples in New York for the season of 1892-93 was \$2.50 a barrel, and for the season just passed, \$4.50 a barrel.

Many of the apples exported come from western New York; the largest apple farms have storage houses or cellars provided, and these are also found in many towns, for neighborhood use. At the beginning of winter the storage house or cellar is filled with cold air and closed up with the temperature at 28 or 30 degrees. Later in the season, when the temperature inside rises to 35 or 40 degrees, cold air is again let in. By this means apples are kept until the end of winter without ice. For late holdings cold storage is necessary. Shipments are usually made to commission dealers in the seaboard cities, by whom transportation is arranged for through a shipping broker. The fruit is sent on fast passenger steamships and is stowed in the hold away from the engine and boilers, generally in the forward part of the vessel, where the ventilation is best. In the early years of the trade apples were carefully wrapped in paper and packed in cork or mahogany sawdust, but no special precautions are now taken beyond having perfectly sound fruit. Shipments vary from 500 to 1,000 barrels, sometimes as many as 8,000 going on a single steamer. The fruit is consigned to an English agent who remits the proceeds of sale after deduction for ocean freight, besides expenses for landing, harbor dues, delivery and sale. Cable advice as to prices is sent to the dealers on this side and shipments made on such advice naturally result in gain or loss as the English market may happen to rise or fall. New York merchants tell of losing as much as \$3.00 a barrel, while the highest authentic price ventured upon by a veteran dealer is 105 shillings a barrel for a half-dozen barrels twenty years ago.

The season here is nearly ended, and the few apples held in the interior of the state for trade values will all be disposed of before the new crop comes in from the South. Roxbury Russets, Baldwins and Golden Russets are the only sorts quoted in the market reports. These now arrive at the rate of about 300 barrels a day and bring at wholesale \$6.00, \$5.50 and \$5.00 a barrel. Dealers have recently divided their barrel stock into bushel lots, and these are offered in boxes at barrel rates.

New York.

M. B. C.

Foreign Correspondence.

London Letter.

ÆSCHYNANTHUS HILDEBRANDII.—This is a new species, and one that is likely to become a favorite with those cultivators who are interested in pretty little tropical plants. It has lately been introduced to Kew by Mr. Hildebrand, of Fort Stedman, Shan States, Burma, where it is epiphytic on the trunks of large trees, the roots finding nourishment in the crevices of the bark. Several little specimens of it have been established in teak baskets, and they are planted in sphagnum-moss, the treatment being such as is given to *Phalænopsis*. Although the stems are barely three inches

high, they bear a considerable number of bright scarlet tubular flowers with orange and black-purple blotches in the throat; the leaves are sub-rotund, petioled and covered with fine hairs. It appears to be nearest *Æ. gracilis*, also Indian. The charm of the plant is in the erect habit of the short stems, the rich green of the leaves and its elegant, brilliantly colored flowers. A figure and description of it will shortly be published in the *Botanical Magazine*.

PROTEA CYNAROIDES AND *P. NANA*.—These are two of the most interesting plants now flowering among the south African plants at Kew. The former is an erect-branched shrub six or eight feet high with numerous spathulate bright green leaves and a terminal head of flowers suggestive of an Artichoke, *Cynara Scolymus*, but the color is pale pink. The plant now in flower is growing in the succulent house along with the Agaves, and it is planted out in gravelly soil. Thus treated it is much happier and produces finer flowers than when grown in a pot. *P. nana* is totally different, being not unlike a small Pine in its habit of branching and in the linear and crowded leaves. The nodding cup-shaped flowers are colored blood-crimson and are two inches across. A picture of this same plant in flower, taken two years ago, was published in *GARDEN AND FOREST* (vol. iv., page 412) along with some notes on the handsomest sorts of Proteas, a genus well worth the attention of the modern horticulturist.

EPIPHYLLUM MAKOYANUM.—This is a plant of which note should be made by growers of stove-plants, and especially of Cacti. I suppose it is nothing more than a form of *E. Gaertneri*, figured in the *Botanical Magazine*, t. 7201, the only difference being that in the former the branch divisions are narrow and thin as compared with the latter, and there are fewer and smaller hairs at the apices of the nodes. In flower, form and color the two are identical. They differ very much from the *E. truncatum* group, which have hitherto had a monopoly of the favor generally meted out to Cacti by horticulturists, and, in my opinion, they are superior. The color of *E. Makoyanum* is a uniform orange-scarlet, and the form is more like that of a *Phyllocactus* than *E. truncatum*. There is a plant of *E. Makoyanum* in flower now at Kew, which was a small branch grafted upon a short stem of *Cereus nycticalus* three years ago; it is now a dense mass of branches nearly two feet across, and is covered with bright-colored flowers.

AGAVE POTATORUM.—This species was introduced into cultivation from Mexico about 1830, and it was described by Zuccarini as a good species with broad spiny leaves and a pole-like scape twelve feet high, including the thyrsoid panicle, five feet in length. An enormous specimen of it which had long been a striking feature in the succulent house at Kew, last year started to push up a flower-spike, and to give this headroom the plant was removed to the Palm-house, where it is now finely in flower. Mr. Baker suggested years ago that it was doubtfully distinct from *A. Scolymus*, and now he has decided that the two are identical. But, while there may not be good botanical characters to separate the two there can be no question that *A. Potatorum*, as represented at Kew, is very much larger in leaf, scape and panicle than any of the many forms of *A. Scolymus* described. The Kew plant has a huge rosette of leaves each three feet long and a foot wide; the scape is fifteen feet high and six inches in diameter at the base, and the panicle is an enormous candelabrum-like arrangement three feet high, of erect pale-yellow fleshy flowers, each three inches long. It is a magnificent Agave.

LILIUM HENRYI.—I do not know when this fine Lily will cease to surprise us, but it increases in vigor and beauty every year. At Kew there is now a bed of it, or rather a bed of bushes of *Olearia Haastii*, with some fifty bulbs of the *Lilium* planted among them, and some of these are now sending up purplish growths nearly an inch in diameter. Dr. Henry told us it was a giant in China, and it promises to bear out that description here. Last year we had plants of it eight feet high. In addition to the bed, we have a large batch of seedlings raised from seeds ripened

here. I anticipate immense popularity for this *Lilium*. It is as hardy and good-natured, apparently, as any of the *L. umbellatum* set.

RHODODENDRON LUSCOMBEI.—This hardy shrub I wish to recommend strongly to any one who wants a first-rate plant for the open border. With the habit of *R. Thomsoni*, one of its parents (the other being *R. Fortunei*), and rich rose-red campanulate flowers, each three inches across and borne in elegant clusters, it is suggestive of *R. Aucklandii*, to which *R. Fortunei* is closely allied. At Kew there are several bushes of it which have been in flower since the middle of March and are beautiful now. It was raised about twenty years ago by the gentleman whose name it bears. *R. Fortunei* is a species which has not been made as much use of by breeders of *Rhododendrons* as it might be. It forms a handsome bush, has large bright foliage and bears its large pale pink flowers with freedom. I have never known it injured by frost at Kew. It is probably the Chinese form of *R. Aucklandii*, the queen of the species from the Himalayas.

FRITILLARIA MELEAGRIS.—The "Snake's-head," a native of Britain, is one of the most delightful and effective of spring-flowering bulbs when planted in mass in a bed on a lawn. There are two such beds at Kew, ten feet in diameter, and they are full of flowers of various colors, ranging from purple to white and prettily tessellated or checkered. The flowers began to open a month ago and they are still in all their glory. We have another bed of a native weed, a very common weed, in fact, the vulgar Dandelion, and very effective it is, its fine dentate foliage being well developed in good soil, and its large heads of golden-yellow flowers are as attractive as anything could be. The bed is labeled simply *Taraxacum officinale*, and this is a source of considerable confusion and doubt to many who, were it not for the label, would recognize the weed of the wayside; but the label decides for them, and the verdict is "a beautiful plant, like a Dandelion, but much better."

Trees and shrubs which are hardy in England, flower in spring, and whose flowers are ornamental enough to please the popular eye, are receiving more than the usual amount of notice this year. This is partly owing to the decision of the Royal Horticultural Society to have a series of lectures upon them by specialists, and to invite all exhibitors to send to the fortnightly meetings examples of any worthy of exhibition. Add to this the fact that last year's drought and bright sunshine, followed by an exceptionally warm and sunny spring, has had a wonderful effect upon the floriferousness of hardy plants generally, and we have a set of circumstances calculated to give an exceptional fillip to the movement in favor of deciduous hardy trees and shrubs for the English garden. And that they eminently deserve it—indeed, that horticulture requires that they should be brought into prominent notice—is seen in the great variety and beauty they present in the few gardens where at present they only appear to be grown.

Kew is every year becoming less and less suitable for the cultivation of delicate Conifers and all evergreens to which smoke is distasteful; but it is still well adapted for deciduous trees and shrubs, which, after all, have a great deal more to recommend them than have many Conifers. It is, however, a case of "Hobson's choice." Conifers are becoming hopeless in some parts of the garden, and so other plants must be used instead. There is, fortunately, a host of beautiful and interesting things which are quite happy at Kew, and which have only to be shown in groups and grown into character to make Kew more attractive even than it is at present. Already the Rosaceæ, Leguminosæ, and other large groups which comprise so many handsome flowered plants, have received special attention. At the present time (April 20th) there is a wealth of bloom on the trees and shrubs outside which far exceeds anything I have ever seen here, and which is attracting as great crowds of visitors as are usually seen here only in August. The most noteworthy of the hardy shrubs now in flower at Kew are *Exochorda grandiflora*, of which

there are two large examples, one on a lawn where it forms a handsome bush and is now fairly well in flower, but not so well as the second specimen, which is trained against an east wall and is laden with beautiful snow-white flowers. *Ceanothus rigidus*, on the same wall, has been a picture of blue for the last fortnight; it is one of the best of the species represented here. *Neviusia Alabamensis*, another handsome shrub from the southern United States, is grown against a wall here and is now wreathed in flower. *Genista præcox*, one of the best of the Brooms, a hybrid between *G. purgans* and *G. alba*, is a grand picture, two large beds of it in a conspicuous place on a lawn being attractive from a considerable distance. Its one defect is its powerful and rather fœtid odor. *Kerria Japonica*, both the single and double-flowered forms, are globose bushes of yellow, and varieties of *Camellia Japonica* are flowering as I have never before seen them, and quite as well as the specimens under glass. *Rhododendron Rhodora* is also very fine this year, and *Bryanthus erectus* is as thickly laden with its elegant rosy-pink flowers as the common heather. *Magnolias purpurea*, *Lennei*, and, of course, *M. conspicua* and its variety *Soulangeana*, are a great attraction—Water-lily flowers the public name them.

London.

W. Watson.

New or Little-known Plants.

Prunus orthosepala.

THE history of this plant, as I know it, is briefly this: In June, 1880, Dr. George Engelmann, of St. Louis, sent to the Arnold Arboretum a package of seeds marked "Prunus, sp., southern Texas." Plants were raised from these seeds, and in 1888, or earlier, they flowered and produced fruit, which showed that they belonged to a distinct and probably undescribed species. A name, however, was not proposed for it, and, in 1888 probably, plants or seeds were sent to Herr Späth, of the Rixdorf Nurseries, near Berlin, where this Plum was found in flower by Dr. Emil Koehne, who has described it under the name of *Prunus orthosepala*.*

Prunus orthosepala (see p. 187), as it grows in the Arboretum, where it is perfectly hardy, is a densely branched, twiggy shrub, four or five feet high and broad. The branchlets are stout, slightly zigzag, marked with small pale lenticels, bright reddish brown and rather lustrous during their first season, growing darker during the winter, and finally becoming dark brown. The bark of the old stems, which are sometimes armed with long, slender, straight spines, separates in large, loose, thick, plate-like scales. The winter buds are obtuse and covered with closely imbricated scales, those of the inner ranks being accrescent, variously three-lobed at maturity, and marked at the apex with red. The leaves are oblong-ovate, acuminate, long-pointed, unequally wedge-shaped or occasionally rounded at the base, and coarsely serrate, with incurved, callous, or rarely glandular-tipped, teeth; they are puberulous on the lower surface toward the base when they unfold, and at maturity are thin and rather firm, glabrous, light green and lustrous on the upper surface, pilose on the lower surface, two and a half to three inches long and two-thirds of an inch broad, with slender pale midribs impressed on the upper side, remote veins, forked and connected near the margins, fine reticulate veinlets, and slender, slightly grooved, puberulous petioles furnished near their apex with one or two large glands, and half an inch in length. The flowers, which appear at the end of May, when the leaves are about one-third grown, are produced in three or four flowered clustered fascicles, on stout pedicels half an inch long. The calyx-tube is green, turbinate, and about as long as the narrow acute lobes, which are puberulous on the outer surface, ciliate on the margins, coated on the inner surface with thick pale tomentum, and often tipped with red. The petals are narrowly obovate, rounded at the apex, narrowed at the base into slender claws, thin and white, or white

* *Deutsche Dendrologie*, 311 (1893).

tinged with pink, and are inserted remotely on the glandular disk. The stamens are orange color, exerted, and about a third longer than the slender glabrous style, which is thickened at the apex into a truncate stigma. The fruit, which ripens in the middle of September, and is produced rather sparingly, is globose, an inch in diameter, and hangs on a stout rigid stalk half an inch long; it has a thick, very dark blue, or nearly black, skin covered with a glaucous bloom; thick, juicy, yellow flesh of good flavor and quality, and a flattened, oval, or nearly orbicular, obscurely rugose, stone, deeply grooved on the dorsal edge, and conspicuously ridged and rounded on the other.

Prunus orthosepala is a true Plum, rather closely related

Christmas, but its ample racemes of fair-sized rosy pink flowers are very persistent, and the variety is one of the best of winter-flowering Begonias. The leaves are peltate, and of a shining reddish bronze, quite distinct from those of any other variety. The illustration on this page is from the photograph of a specimen growing at Kew, but it hardly represents the plant when at its best. Complaint has been made in England that this Begonia is rather troublesome to grow, but it does not seem to be exacting in its demands on cultivators in this country, where it constantly grows in favor on account of its good habit and the brightly color of its flowers.

Cultural Department.

How Not to Judge an Apple.

I HAVE been long convinced that many of the opinions given in print upon the quality of apples are from persons who do not know how to judge any fruit fairly. An apple differs from most fruits in not having its maturity for eating indicated clearly by outward appearances. Every dessert variety of this fruit has its proper time for eating out of hand, which may be long or short, according to its season. Tested at any earlier or later time, no fair judgment is possible. As regards summer and early fall fruit, the time at which an apple is at its best is necessarily short; and even with winter fruit there are not many varieties which are at their best for many weeks.

It is not too much to say that one must have time in order to decide justly upon the dessert quality of an apple; and this aside from the fact that apples, even the best, are not as good in some seasons as in others. A year like the past, in which the crop was small, and much injured by unfavorable conditions, would not be likely to give any really fair samples for testing the general quality, nor, even in favorable seasons, are the few first fruits on a young tree or graft likely to represent the true quality of the variety. Nor are fruits on the exhibition tables at fairs and fruit meetings, no matter how handsome and externally perfect such fruit may be, or appear to be, in the best state for testing their quality, and yet that is the time when a great many snap judgments are made, and find their way into print. A succession of judgments so made and printed are often quite enough to give a fruit a bad name, which it will be long getting free from, however unjust it may at last prove to be. No doubt, a good apple, with marked marketable qualities, will outlive all such mistakes and misrepresentations; but it is an injury to the fruit-growing as well as the fruit-consuming public that such mistakes should ever become current as expert judgments.

Probably no fruits have suffered more in the public estimation from such causes than the fruits of Russia during the twenty years since they were extensively introduced into this country. The minds of all those interested seem to have been made up in advance, and to be essentially based on what was known of the earlier importations of Russian apples by the way of England, some forty years ago. Nothing could have been more unfair or misleading. Russian tree-fruits vary and differ among themselves quite as much, and in as many ways, as our longer-known varieties; and no man could estimate them fairly who relied on what was learned at exhibitions where no heed was taken by exhibitors except to external characteristics. These fruits, like all others, must be carefully studied under fair conditions and with deliberation; and, so far, there are probably not yet an average of more than two or three orchards to a state, along our northern boundary, where the material exists for satisfactory study of them at this time. When we consider that considerably over three hundred varieties of these tree-fruits have been introduced, it must be clear to any intelligent mind that he who condemns them all demonstrates his own incapacity to judge any of them rightly.

Newport, Vt.

T. H. Hoskins.

The Rock-garden.

AS the annual overhauling of the garden comes round there is the customary record to be made of the exotic plants which have survived, and of those found dead. The pretty little rose-flowered *Glacial Pink*, *Dianthus glacialis*, from the Alps of Dauphiny and north Italy, is all but gone. Last winter it stood well. I am still of opinion, however, that it is not the extreme low temperature, but rather the high temperature, which it was unable to endure. *Salvia argentea*



Fig. 33.—*Begonia Gloire de Sceaux*.

to *Prunus hortulana*, from which it can be distinguished by the smaller number of glands on the petioles, by the eglandular calyx-lobes, the dark-colored fruit and smoother stone.

C. S. S.

Plant Notes.

Begonia Gloire de Sceaux.

THIS is a choice winter-flowering plant, introduced some ten years since by Thibaut & Keteleer, nurserymen, at Sceaux, France. It was announced then as a cross between *Begonia Socotrana* and *B. subpeltata*. It is fibrous-rooted and not deciduous, readily increased by slips, and requires no special treatment, except generous culture during the summer. It scarcely flowers before

came through looking fresh. This is a biennial species with handsome, broad, silvery leaves, and ornamental on this account only. It is from the Mediterranean region, Monte de Cammarata, Sicily, and Crete, and said by one authority to be hardy "only in the southern part of Britain."

It is again pleasant to find *Campanula Garganica*, from Mount Gargano, Italy, looking thrifty. *Linaria alpina*, from the Alps of Switzerland and the Pyrenees, which forms silvery tufts covered with bluish violet flowers, and *L. Dalmatica*, a remarkably handsome perennial with glaucous foliage and large spikes of clear yellow flowers, have come through well. Experienced persons only should be intrusted with the work of weeding, as it often happens that some choice plant, which we have failed to raise from seeds by the ordinary methods, will sow itself. I found a considerable number of *Primula rosea* coming up among the old plants. This was introduced from Kashmir in 1879, and is one of the hardiest and best Primroses for this latitude. Of *Mertensia Virginica* it would seem impossible to have too much. It is one of the earliest and most beautiful of our spring flowers. Its handsome drooping panicles of incomparable blue are strikingly effective, yet it seems that in a few years we shall have to weed it out somewhat. We have no trouble in keeping up stock of *Campanula Carpathica* and *C. rotundifolia*; *Alyssum saxatile* and *A. Wiersbeckii*, the latter a very bright yellow; *Arabis albidia*, *Silene Virginica*, *Papaver nudicaule*, *Erysimum pumilum*, *Callirhoe macrorrhiza*, *Aquilegia Canadensis*, *A. cœrulea* and *Dianthus deltoides*. The Siberian Squill, as well as the *Chionodoxas*, sow themselves quite freely, but it is only in places like these where no spading is done. *Viola cucullata* threatens to become a nuisance.

Plants now in bloom include *Primula rosea*, *Arabis albidia*, *Viola odorata* in several forms, including Rawson's White; *Aubrietia Eyrei*, *A. Leichtlini*, *Adonis vernalis* and *Periwinkles*. *Pæonia tenuifolia*, a fine species with single flowers, from the Crimea, is just opening, and is one of the earliest and best of *Pæonies*; *Saxifraga (Megasea) purpureascens* and *S. cordifolia* are growing handsomer every day, as their stout cymose panicles of pink flowers lengthen.

On a grassy slope near by, bright patches of *Phlox subulata*, white and purple, are very conspicuous. Properly disposed, there are many other plants which may be used effectively in this way. Such *Narcissi* as *Emperor*, *Princeps*, *Horsfieldi*, *Maximus*, *Stella* and *Sir Watkin* are already past.

Wellesley, Mass.

T. D. Hatfield.

Spring Flowers.

IRISES.—*Iris pumila*, *I. Chamæiris*, *I. Olbiensis* and *I. verna* join the ranks of the flowering plants this week. They are all dwarf plants quite distinct in effect. The rich deep blue falls, with the bright orange keels of the native *I. verna*, render it one of the most attractive of the small rhizomatous Irises. The flowers are very small indeed, and only a fair-sized clump will produce a color-effect in the border. The *I. pumila*, white and violet, and *I. Chamæiris*, yellow, and *I. Olbiensis*, purple, are taller Irises, well known in many gardens. There is another Iris unfolding more perfect charms than either of the first-mentioned species, and has, in fact, more beauty than is given to many flowers. This is *I. Iberica*, an old friend, which is very chary of its favors. Any description will give but a faint idea of the beauty of these flowers, with their immense standards slightly tinged with pink, and the short broad falls daintily lined and mottled with a rich dark brown on a light ground. A deep rich blotch of brown on the blade of the fall gives the last touch of beauty. With me *I. Iberica* is the most reliable of the *Oncocyclus* section of Irises, and seems more amenable to cultivation in the border. It should be grown by all fanciers of fine hardy plants. Care should be taken to secure strong clumps when possible. They should be kept dry after flowering until the middle of August. After this time, in our climate, I believe they are better for full exposure in all seasons. I am in much doubt as to this point in the cultivation of the other members of the family, but at present am inclined to believe that protection is not required for the majority of them. There is much variety of habit among the dozen or more species. Some of these I have not grown long enough to become fairly acquainted with, and some of the older ones take their leave just as one fairly warms up to their habits. *Oncocyclus* Iris-flowers are pretty scarce every season in my garden, however it may be elsewhere, and to ensure crops these plants should be kept in a cool house, where they usually do very well. Still there is a certain amount of pleasure in trying to establish such nice plants in the open, and the failures are annual incentives to a new trial. One always has before

him the possibility of a perfect success sometime, when a mass of beautiful flowers will repay all previous cares. These, it may be said in passing, are not "the poor man's Orchids," as some one has dubbed the Irises, for, though not usually expensive plants, they are mostly unreliable, and one can grow fairly scarce Orchids at a much less average expense of flower.

PRIMROSES.—If I have not noted the Primrose season each year in GARDEN AND FOREST it has been an oversight and a neglect of one of the most charming flowers of the period. At this time the tufts of hybrid Primroses are in full blow; there are those pure white, the dainty yellow to which it has bestowed its name, and the even more effective orange. Then we have pale reds, almost pink, and dark reds, some very bright indeed, and magentas. For bright spring bedding effects nothing could be better. Of course, we must have Pansies, but these Primroses are even less trouble and have a character all their own, and a distinct effect. They are readily grown from seed sown now, the plants from which may be transplanted in some out-of-the-way corner to make growth. They need no protection, summer or winter, and may be shifted at any time with safety, if care is taken to remove them with a good ball of earth. The old plants can be pulled apart when new stock is wanted, and each crown will soon form a new clump, so that they are rapidly increased.

Dean's (English) strain is probably the most satisfactory one, Mr. Dean having made a speciality of these and worked up the modern Primrose to its present standard with the blood of many species.

The old favorite *Polyanthus* is also in full flower, and its golden trusses, with shades of dark reds, are very effective, especially when peering from the grass among which they hold their own. *Primula* species do not continue with me for long, usually disappearing from the borders after a short life. The varieties of *P. cortusoides* seem to be the only constant ones, perhaps, to remind me that we differ in our likings in colors, for they are mostly pitiable blue reds. Their light green waxy leaves, however, are very pretty, and they flower in a light, graceful way on tall scapes, with an umbel of lightly formed flowers. There are a few alpine *Auriculas* under glass, the flowers with rich velvety colors and light edges, the handsomest of the Primrose family. But these are much care under glass, and one earns his *Auriculas* grown in that way. Hereafter they shall take their chances out-of-doors, where it is to be hoped the slugs may be merciful.

Elizabeth, N. J.

J. N. Gerard.

Retarding Plant Growth by Means of Low Temperature.

EARLY in February of 1893 a number of plants of *Golden-rod*, *Solidago juncea*, and *Aster Novæ Angliæ* were dug from the frozen ground with as large an amount of soil adhering to the roots as possible. The ground was frozen so hard that it was difficult to get many good roots, but in a few instances a fairly large proportion of the root-system was obtained. These plants were then packed in boxes in damp moss without being allowed to thaw out, and the plan was to subject them to cold during spring and early summer, in order to prevent them from starting into growth. The ice-houses in the city were being filled at the time, and arrangements were made for storing the boxes so that they should be in contact with the ice until removed during the summer. After being filled with plants and damp moss, strips of lath were nailed across the tops of the boxes to keep the contents from being thrown out when they were handled. Only a small amount of air could reach the plants, for the moss was firmly pressed in, and the ice would also prevent such circulation.

It was not until the 10th of the following October that the three boxes were removed from the ice-houses. When unpacked about a week later it was found that the *Asters* and the *Golden-rods* had thrown out shoots from one to two inches long; these were perfectly white.

The plants were put into five and six inch pots on October 18th, the soil being a rather coarse, rich, clay loam. Those which carried much soil were trimmed down till they fitted the pot, and only little additional soil was needed. After being potted the plants were put in a cool house. Most of them soon started into active growth, and all promised well for a good crop of blossoms. All the plants did not fulfill their promises, but one after another became tired of growing and stopped short. Others continued as they began, and during the latter part of February and throughout March they opened the

flowers which normally should have appeared about six months earlier.

The blossoms which appeared upon the Asters were fully one and a half inches in diameter, but later ones were smaller. The color appeared to be practically of the same tint as that produced by plants growing under normal conditions. The number of blossoms produced was smaller, and although the largest plant made a growth of practically thirty inches, it produced only nine flowers. Several stems which should have borne failed to do so, probably from want of sufficient nourishment.

The Golden-rods gave by far the best results. The strongest plant was twenty-eight inches high and had eight flower-bearing stems. This plant is practically a weed in many cases when it takes possession of entire fields. In the fall it is so abundant that its beauty is overlooked, and perhaps the strange treatment it received somehow brought out all its possible

described above, although, perhaps, more successful methods could be devised.

It may be added that cuttings of the common White Willow, the Victoria Currant, and of Stark and Sweet Bough Apples were packed in the moss with the Asters and Golden-rod, and treated in the same way. Without giving details here, it is sufficient to state that many of these were quite dead, and those which survived generally showed greatly impaired vitality. The living ones showed interesting differences, which may be worth describing hereafter.

Cornell University.

E. G. Lodeman.

The Chinese Quince.—This beautiful small tree is now flowering here, although rather more sparsely than usual, since many of its flower-buds were injured by the frost. Its leaves on the upper side are smooth and shining, as if varnished, but while young are pubescent on the lower surface. The bright



Fig. 34.—*Prunus orthosepala*.—See page 184.

charm. But, whatever may have been the cause, the plant gave us a surprise that was almost startling. Rarely can one see such rich coloring as was brought out when the deep yellow of the flowers was seen among the other flowers in the greenhouse. Contrary to all expectation, the element of coarseness seemed to be entirely removed when the plumes of yellow blossoms were brought in close contrast with even the most delicate of foliage or flowering plants. It seemed to have the power of blending harmoniously with nearly every plant grown.

If Asters and Golden-rods can be forced, it is probable that few flowers now grown can equal them in beauty and attractiveness in late winter or early spring. This is particularly true of the Golden-rod. From the success attending this attempt it would seem that with better preparation of the plant the work could be even profitably carried on in the manner

pink blossoms are about half the size of those of the common Quince, and are scattered along the larger branches of the tree. They have very short flower-stalks, and appear a few days before those of the common Quince. It is somewhat remarkable that this tree is not more generally cultivated, for, in addition to its neat habit and attractive flowers, its large and beautiful fruit is singularly fragrant, and in autumn its foliage turns to most brilliant colors. The partial failure of the tree to flower is unusual, but this is a year when many bright things have suffered. The lovely form of *Pyrus doringi*, known as *P. Parkmanni*, has lost every flower-bud.

Shepherdstown, W. Va.

Danske Dandridge.

The Onion Maggot.—We fought a losing battle with this enemy for several seasons until kerosene was tried, and we have had good crops ever since. Half a pint of kerosene is well

mixed with a pailful of some dry material, preferably wood-ashes, but sand, sawdust, or even dry soil will do fairly well, and after the plants are well up and the trouble is at hand a sprinkling of this mixture along the rows about twice a week during the time the fly does its work will be found a sure preventive of the trouble. With us this is from the beginning of April to the end of May; after this there is little danger, as the onions are of a good size and not so liable to injury.

South Lancaster, Mass.

E. O. Orpet.

The White Grape Currant.—I have an idea that many persons think they have this variety, when in reality they have some other sort. It was a long time before I secured what I believe now to be the genuine plants. The White Grape is, in my judgment, absolutely the finest Currant grown. It is very large, handsome and of a clear color, entirely unlike the creamy color of the more common so-called White Currants. The White Dutch has a very rich flavor, but it is more seedy and mellow. The color is translucent, with a soft yellow tint. I find the true Versailles not unlike the Fay in size and color, but it has a much more upright growth. It has a long fine stem, and is enormously productive, with a flavor almost exactly like that of the Fay.

Clinton, N. Y.

E. P. Powell.

Correspondence.

Measurements of White Pine.

To the Editor of GARDEN AND FOREST:

Sir,—In the pursuit of an extensive series of measurements instituted by the Forestry Division for the purpose of ascertaining the rate of growth and production of White Pine and Spruce, one of our agents has just reported from Merrill, Wisconsin, the measure of a remarkable White Pine, a windfall, which had been thrown probably a number of years ago, as the sap-wood, mostly rotten, indicates. It measured 200 feet in length by forty-five inches in diameter on the stump. As in the Census work of Professor Sargent, the range in height is given to 170 feet (fifty-two meters), it might be interesting to record this unusual length of an old monarch. Altogether, the measurements of the acre-yield on the clay soil of the station, with a good humus cover, are worthy of notice. The height of the Pines, which are mixed with Hemlock and Birch, averages over 120 feet, not a few reach the height of 150 feet; the length of the timber—that is, of the merchantable part—exceeded in many of them 100 feet; the total amounts of timber contained on the acre are not as yet computed. The age is from 200 to 250 years; the diameters are not extraordinary, and range from thirty to thirty-six inches.

In this connection I would like to ask readers of your journal for addresses where second-growth White Pine groves, naturally grown or planted, could be found in New England, for measurements of their yield.

Forestry Division, Department of Agriculture.

B. E. Fernow.

The Flavor of Maple-syrup.

To the Editor of GARDEN AND FOREST:

Sir,—According to his promise, Professor Hills has sent me some of that maple "honey," and it is delicious. The drip is heavy and good, the color is light and the flavor delicate, and the true maple taste can be recognized on cakes made from refined wheat-flour, but it is almost imperceptible on cakes made from buckwheat, Graham flour, corn-meal or any other grain with a flavor of its own.

I do not urge a return to the open kettle in making maple-syrup, but I do believe that syrup properly made in open pans has a better flavor than that made in the modern evaporator. I do not believe that the especial maple flavor is due to leaves, buds and foreign matter, and what I should like to know is, whether a syrup or sugar can be made by modern methods, whereby this flavor will not suffer? I should like to know if any one is prepared to present evidence that the present style of evaporating does not destroy at least a part of the real flavor of the maple-sap, which would occur in the syrup if made in the open kettle, even when all leaves, buds and "dropping mosses and fragments of bark" are excluded. It is possible that here is a field for investigation worthy the attention of chemists and practical maple-sugar-makers. The open kettle does not furnish an ideal method of making syrup, and yet there is abundant evidence that much of the syrup and sugar made by the modern evaporator is of very unsatisfactory quality.

Agricultural Experiment Station, Ind.

C. S. Plumb.

Irrigation in the Garden.

To the Editor of GARDEN AND FOREST:

Sir,—A few years ago my little daughter brought home about fifty Verbena plants from one and a half inch pots. They appeared to be worthless and had been given to her by a gardener who was about to throw them away. To gratify the child I planted them in the only place which I could use for that purpose—a shady back-yard, trodden hard by the children. I spaded the ground about eighteen inches deep, added a little fresh earth and well-rotted barn-yard manure, making a bed about seven feet square, with a shallow ditch around it. The plants were watered freely with a sprinkler two evenings and the ditch filled with water at the same time. The summer was very dry, but no further sprinkling was done until the early frosts came. About once a week the ditch was filled with water and kept filled for an hour. The Verbenas soon covered the ground and yielded a profusion of bloom until the plants froze. The effects of light frosts were dissipated by free sprinkling with cold water before the sun reached the bed. Is there not a hint in this homely experience for watering by means of open ditches, where costly methods of subirrigation are not practicable?

St. Paul, Minn.

F. D. Willis.

Recent Publications.

The winter-killing of trees and shrubs is the subject of a recent bulletin from the Wyoming Experiment Station, a subject interesting everywhere, but particularly so in the arid regions and high altitudes of western plateaus where fruit-trees and forest-trees are grown with great difficulty. Trees and shrubs thrive on these high plateaus during the irrigation season, but the most promising often fail to get through the first winter. The cause of this can hardly be the low temperature, for it is not colder there than in New England or Minnesota, where winter-killing is less common. It is, therefore, probable that desiccation is the principal cause of winter losses. Since the water absorbed by the roots contains food-material in very small quantities, the excess of water passes off by transpiration. The rate of transpiration is greater when the light is intense, and it is greater in a high temperature, so that in these high altitudes, where the intensity of the light is only dimmed by slight cloudiness, and where the rays of the sun in the rarefied air fall with peculiar force upon all exposed objects and raise their temperature considerably beyond that of the surrounding atmosphere, transpiration is greatly accelerated, while the prolonged winds agitate the trees and aid in this work. An excessively dry atmosphere increases transpiration, and the roots in a dry or frozen soil cannot make good the loss, because the low temperature decreases the absorbing power of the roots and the conducting power of the stem, and the soil yields its water much more slowly. Although when leaves are absent no one notices the wilting of vegetation, the plant dies as truly from wilting in January as it does in July.

There is one other factor in the case which has not often been considered, and that is atmospheric pressure. It seems probable that the diminished pressure in high altitudes exerts an influence upon transpiration independent of the fact of dry atmosphere. To determine the relation between atmospheric pressure and transpiration, Mr. Alven Nelson, the botanist of the station, constructed an apparatus for testing this point, and the experiments prove conclusively that the rate of evaporation from the surface of the plant is proportionately increased by the diminution of the atmospheric pressure, and this, added to the several other causes of desiccation specially operative in the plains region, indicates the real cause of such a large percentage of winter-killed trees and shrubs.

Of course, the remedy is to keep the plant, and especially the roots, in a moist condition, but this is often difficult to accomplish. Late fall irrigation and occasional irrigation during the winter months is recommended. It frequently happens that although the soil temperature is below the freezing-point, there is not enough moisture in the particles of the soil to cause them to adhere to each other, and for the purposes of the plant the soil is absolutely dry. If water is flowed over the soil on a warm day some of it will enter into its interstices, and if a coat of ice forms over the surface this will prevent loss by evaporation. In the natural groves of Cotton-wood that border the western streams, the ground in winter is usually covered with ice and snow. Irrigation is especially needful during the first two or three years after transplanting, when the roots are few and near the surface. After they have penetrated below the frost-line the plant will be much better

able to care for itself. The first winter is especially critical, for then the transpiring surface is in excess of the absorbing surface, and the soil-connection of roots with the soil is more easily broken by the winds which sway the tree. The reason why the Pines and other conifers which thrive on neighboring mountain-sides cannot be made to grow on the plains may be explained by the fact that the clouds and fogs in which mountain vegetation is bathed, and the higher relative humidity of the atmosphere, tend to reduce transpiration, while the deeper snows furnish more soil-moisture. In the plains, where the soil-moisture is reduced and the atmosphere is relatively dry, the sun raises the temperature of the leaves and accelerates transpiration, while the absorbing power of the roots does not increase. Whether irrigation is feasible or not, a liberal mulch will prevent frost from penetrating so deeply, will retard evaporation from the soil, keep the moisture near the surface and give the plants the fullest benefit of all water received, whether from artificial or natural sources. Tender plants need protection against sudden changes of temperature as well as desiccation. Small trees may be wrapped with straw, or even with paper, and old barrels with the bottoms removed can be set over the plants and then have hay packed about them. This is especially valuable during the first winter or two after the plant is set out. In some places on the plains Peach and other less hardy fruit-trees are set out with the roots trained in two opposite directions only. In autumn a trench is dug close to the tree on one side at right angles to the root-line, and it is bent over until it lies as nearly horizontal as may be. The soil then thrown about and over it holds it down and serves as the best protection from loss of water and against sudden changes. In the spring the soil is removed and the trees straighten up, none the worse for their winter sleep if due care has been taken to disturb the roots as little as possible.

Meetings of Societies.

Fruit-growing in Florida.

FLORIDA has an exceedingly vigorous Horticultural Society, which held its seventh annual meeting in Jacksonville on the 10th of April. The two hundred active members who assembled were welcomed by the Mayor, who encouraged them by some eloquent remarks on the importance of fruit-growing and other branches of horticulture. President W. W. Adams illustrated this fact by stating that the orange crop alone amounted to five million boxes, while peaches, pears and tomatoes were leaving the state by the car-load, and there are preparations already made in the state to furnish train-loads of all these in the near future, while there are Orange groves enough planted to produce in a few years twenty million boxes. Mr. Adams claimed that the depressed condition of the fruit trade was not due to overproduction, because the crop of oranges now produced would only furnish one orange a month to each inhabitant of the United States. The business, however, had outgrown the facilities for transportation, and something must be done to enlarge these facilities and economize in transportation, or the future of fruit-growing in Florida would be without hope.

Mr. George H. Wright reported that in Orange County grape-growing began some seven years ago, and last year there were five hundred acres in cultivation. The low price received in 1893 had reduced the acreage somewhat. Refrigerator-car service was necessary to make growing grapes for market profitable, otherwise the grapes must be converted into wine. He advised against planting any more Niagaras, and on sandy soil such varieties as Herbemont, Norton's Virginia, Cynthia were recommended. He thought that vineyards should be set on higher land than had been previously recommended. The vines should have clean culture until June 1st, and a complete fertilizer, one which contained ammonia, phosphoric acid and potash, should be freely used. Growers from western Florida stated that Grapes in that region set on high and well-drained soil had done well. Some growers declared that their products had reached northern markets in such good order as to realize reasonable returns. The experience of others was less satisfactory, and many of the members claimed that, on the whole, grape-growing, beyond raising enough for family use, was not an industry to encourage.

A large Pineapple-grower of southern Florida had found Scrub Pine land to be the best adapted for this fruit, and the varieties which were the most profitable were the Egyptian Queen, Strawberry and the Scarlet Pine. From 12,000 to 15,000 plants could be set out on an acre, and sixty per cent. of

these would fruit the second year, while the next year some of the plants would have from three to five fruits each. Mr. Richards, who is known as the Pineapple King, states, in reply to an inquiry as to how long the plants would bear, that he had been in the business fourteen years, and his plants now looked better than they did five years ago.

The Fruit Committee called attention to a formidable rival of Florida which was much nearer than California; this was the coast-region of Texas, where an area equal to the entire peninsula could be utilized for growing subtropical fruits. During the last twenty-five years the progress of fruit-growing in both these states had been so rapid, and they had so many interests in common, that it was proposed to hold a joint meeting of Texas and Florida horticulturists to devise the best means of uniting for mutual benefit.

Professor Swingle, of the State Experiment Station, reported that he had discovered a speedy and easy way of making a sulphur solution which had proved an effective remedy for the rust mite and red spider which attacked citrus fruits. The formula is 32 pounds of flowers of sulphur made into a paste, with 12 quarts of water, 20 pounds of caustic soda 98 per cent. strong, and 4 quarts of water, which are thoroughly mixed and then diluted to 20 gallons. Two quarts of this to a barrel of water should be used for the rust mite, and 4 quarts for the red spider. Against the white fly, which causes what is known as smut on the orange and is now the occasion of some alarm, the following remedy was recommended by Professor Webber: Four and a quarter pounds of caustic soda, 20 pounds of resin, 3 pints of fish oil and 20 gallons of water are put in an iron kettle, and when dissolved are boiled ten minutes. When the mixture is cooled it should be used in the proportion of one part diluted with five parts of water. This is effective against scale of all kinds and the red spider, and is just as valuable for deciduous trees as for the Orange and Lemon. The cost of this mixture was estimated at half a cent a gallon of spraying material when ready for application.

It was generally agreed that in applying fertilizers high-grade mixtures were to be preferred. Some of the members advised planters to buy the different materials and mix them at home. Others believed that it is equally as cheap to purchase the prepared fertilizer from reliable firms. It is evident that more experience is needed with commercial fertilizers as well as with home-made manures before definite conclusions can be stated in regard to their use in this region.

After all, the topic of paramount importance was that of transportation and transportation rates, and the statement that a barrel of flour could be brought east for one-third of the price which it costs to transport a box of oranges west, was cited as an instance of unjust discrimination. The resolution to favor the bill now before Congress to open the coasting trade to vessels carrying foreign flags caused such a heated discussion that the society adjourned with some bitter feeling on both sides.

Notes.

The beautiful pink and fragrant flowers of *Daphne Cneorum* have opened unusually early this year. When planted in the rock-garden in light well-drained soil this *Daphne* is singularly beautiful. A few large plants of this mingled with hardy Candytufts, which trail over the rocks in a similar way, and are covered with the whitest of flowers, just now make a beautiful show.

The recent numbers of Engler & Prantl's *Die Natürlichen Pflanzenfamilien* that have reached us bring the work down to the one hundred and second part. Some of the groups here treated are Stachyuraceæ, considered a family with a single genus of two shrubs, native to Japan and the Himalayas; Guttiferæ, Onagraceæ, Turneraceæ, Passifloraceæ, Bignoniaceæ, Caricaceæ, and a continuation of the Leguminosæ commenced in an earlier issue.

A correspondent of the *Tribune* writes that the most interesting feature of the midwinter fair in San Francisco is the flower-show which is now made by the different counties. The exhibit, both of cultivated and wild flowers, is noteworthy, and it can be commended to every tourist as a revelation of the possibilities of floriculture in a land where frost and snow do not hamper the gardener. The recent rains have brought out the Roses in fine form, and the Rose-show, which begins on May 11th, promises to be exceptionally attractive.

The fruit-growers of California are hopeful of a good year since last week brought abundant rain and the late frosts have done but little damage. In the San Joaquin Valley many

hundred acres of Pear-orchards will come into bearing for the first time this year, and if there is any shortage in the eastern crop on account of the frosts the California growers ought to obtain good prices. Arrangements have been made to guarantee shipments to Chicago in five days, which ought to silence any complaints that the fruit has been gathered too long before it is sold.

The April number of the *American Naturalist* contains an article by Professor L. H. Bailey, in which the origin of the cultivated Strawberry is discussed. The conclusion is that our garden Strawberries are modifications of the Chili Strawberry. This modified type has driven from cultivation the Virginia berries, which were earlier introduced into gardens. The original type of the Chili berry is little known, as it disappears quickly through variation as soon as it is impressed into cultivation. If this conclusion is correct, the Strawberry is an example of the evolution of a type of plant in less than fifty years which is so distinct from all others that three species have been erected upon it, and so distinct that it has rarely been associated specifically with the plant from which it really sprang.

Among the plants now blooming in the hardy herbaceous garden are the Globe-flowers, *Trollius Europus* and *T. Asiaticus*. Their flowers, which are good for cutting as well as for brightening the border, resemble somewhat large buttercups, being a deep pure yellow, although they are globular in form. They have, too, the advantage of blooming again quite freely in the autumn. *Trollius Japonicus* does not bloom so long, but the deep orange color of its flowers makes it effective. Our native *T. latus*, as well as *T. Caucasicus*, are also worth planting. A year or so ago Mr. Orpet noted in these columns that the best way to get up a stock of these plants is from seed which had better be sown in autumn and treated to a good freezing in the cold frame. Under these circumstances every seed will come up in the spring; if not frozen may remain dormant for years.

On Arbor-day, in the state of Pennsylvania, a number of prominent Philadelphians connected with the Pennsylvania Forestry Association planted, with appropriate ceremonies, at the south end of the Centennial Concourse, in Fairmount Park, nine saplings: a Sugar-maple in memory of Rev. J. P. Lundy, D.D., the first President of the American Forestry Association; an American Elm in memory of Dr. D. Hayes Agnew; an Oak in memory of General Meade; an Ash in memory of George W. Childs; another Ash in memory of Furman Shepard; a Sugar-maple in memory of Governor Hartranft; a Linden in memory of Dr. Joseph Leidy; another Linden in memory of John Welsh, and a Sweet-gum in honor of Thomas Meehan, who will live, let us hope, to watch its growth for many years. Memorial plantings of this sort are certainly a very appropriate way of observing this holiday, and the trees, if properly cared for, will be invested with an affectionate interest which will increase with coming years.

During the months of May and June, Mr. J. G. Jack will conduct a series of lectures and field-meetings at the Arnold Arboretum for the purpose of supplying popular instruction concerning the trees and shrubs which grow in New England. A knowledge of descriptive botany is not essential for persons who wish to take this course, as the intention is to indicate the easiest means of distinguishing the commonest native trees and shrubs, and recognizing the foreign species which have been introduced into gardens. The ornamental and useful properties of the trees and shrubs, their habits of growth and other peculiarities will be considered, and the different species will be studied as they blossom, whenever this is practicable. The class will assemble twice a week in the lecture-room of the Bussey Institution, and will then adjourn to the plantations and nurseries of the Arboretum for the formal outdoor study of the plants. During the season the class will meet once or twice outside of the Arboretum at some favorable place for the study of trees.

According to the *Evening Post* of this city, machinery is now being set up in Newark, New Jersey, for manufacturing ammonia from atmospheric nitrogen. Every farmer knows that nitrogen is one of the essential elements of plant-food and that it is far the most expensive of the elements that are required in fertilizing mixtures. It is well known, too, that nearly four-fifths of the great ocean of air that surrounds the earth is nitrogen, and that it is practically useless as food to plants, although they are bathed in it all the time. Recent researches have shown, it is true, that a small portion of this nitrogen

can be utilized by certain plants, especially those belonging to the Leguminosæ, but there never has been any available method of transforming the nitrogen of the air into plant-food for general use. Of course, it is not wise to expect too much from any reported discovery, but if it is true that the sulphate of ammonia can be produced by this new process at about one-quarter of its present cost this will be one of the greatest boons that the science of chemistry has yet bestowed upon the art of agriculture. If ammonia can be cheaply manufactured from atmospheric nitrogen the discovery means that a great step has been taken toward securing a material increase in the productiveness of the soil.

The demand for bananas is shown by the quick sale of 130,000 bunches in this city alone, last week, at a wholesale price as high as \$1.65 a bunch. The scarcity and high price of domestic and all other foreign fruits, excepting pineapples, help the sale of bananas at this season, and large orders are received here from the interior and from Canada. King of Siam oranges come with the last Florida oranges, and selected ones sell for \$1.00 to \$1.50 a dozen. Grape-fruit last week reached the highest price ever paid for it here, selling at auction for \$7.12½ a box wholesale. The largest lot of California oranges received in New York this season, 1,500 boxes, sold here last week at low prices. Probably the first box of cherries shipped east from California this season was sold in Chicago on the 25th of April. The first boxes of Knight's Early reached New York from California on April 30th, fifteen days in advance of last year's arrival, when the first cherries came from South Carolina two days ahead of those from California. These cherries are small, however, and dull in color, and sell slowly at \$3.00 to \$4.00 at wholesale for a box of ten pounds. The first Peen-to peaches, from Florida, also came last week, and these cost \$1.00 a dozen in the fancy fruit-stores. Black Hamburg and Muscat hot-house grapes, from Rhode Island, are luxuries which cost \$3.50 to \$4.50 a pound.

The Cuba pineapple season opened about four weeks ago, and 27,000 barrels of the fruit were unloaded on our docks last week, nearly as many having come the week previous. They are delivered here in four grades, packed in large sugar-barrels, holding a third to a half more than ordinary flour-barrels. The highest grade, known as Extras, are in moderate quantity, and sell now at fifteen to eighteen cents each at wholesale. It takes only forty of these large pineapples to fill a barrel. The grade known as No. 1 counts from fifty-three to sixty fruits to each barrel, and these sell at ten and eleven cents apiece at wholesale. Grade No. 2 runs seventy pineapples to a barrel, bringing about nine cents each, and the smaller, No. 3's, eighty to one hundred to a barrel, range from five and a half to seven cents each in the wholesale store-houses. The two lower grades are most plentiful. This fruit, like the banana, is gathered green, and is ripened up here. There is this season an unusual amount of decay in ripening, which causes a shrinkage of nearly twenty per cent. to the wholesale dealer, for the fruit is all assorted before it is offered for sale. The variety now on the market known as the Red or Strawberry pineapple continues in abundance throughout May, and in moderate supply until the end of June. This is in demand for preserving from the 10th to the 30th of May, when the fruit is most abundant and well matured. The Strawberry pineapple is superior for making extracts on account of its rich flavor. The Sugar-loaf pineapples begin to come early in June, and large cargoes are unloaded here until the end of July, when our domestic fruits hold the market. The tender pulp of this variety makes it, perhaps, the best sort for preserving, and householders secure their supply for this use from the twentieth of June to the first of July. Pineapples and strawberries react on each other in price, according to their comparative abundance. The pineapples offered here during the winter come from Havana. They are of choice quality, being selected from the best fruit in the fields at a season when there is but a limited demand. Florida pineapples were hardly a factor in the market until the past two or three years. This year the crop in that state will amount to 50,000 or even 60,000 cases, a case holding as much as a small barrel. The plantations are in the Indian River country and extend to the Biscayne Bay district. Large tracts are being planted in pineapples in other sections of the state, and it is expected that in five or six years Florida pineapples will crowd out much of the foreign crop. The fruit is handsome in appearance, and brings a good price. The season continues from the middle of May until the end of July, and some of these pineapples are seen here in the fall months. Present freight rates favor Cuba, a large barrel from Havana costing but seventy-five cents, while the charge on a small case from Florida is from \$1.15 to \$1.40.

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The Charles River at Boston.

IF the project for the improvement of the lower reaches of the Charles River, just laid before the Massachusetts Legislature, is adopted, Boston and its metropolitan environment will possess a chain of recreation-grounds which, for attractiveness and accessibility, will have no superiors in the world. The problem of dealing satisfactorily with the Charles River has been a trying one. It was considered by a special commission appointed nearly three years ago, and in its memorable report on a system of open spaces for the neighborhood of Boston, the Metropolitan Park Commission gave much attention to the subject. Good progress was made by both these bodies, but as it was a subject requiring much special study, the Legislature of last year entrusted the matter to a joint board, consisting of the State Board of Health and the Metropolitan Park Commission, with specific instructions to report a plan for its improvement. The Health Board was made a factor in the investigation on account of the serious sanitary elements of the question. Very fortunately it happens that Dr. Henry P. Walcott, of Cambridge, who, as the chairman of that board, was also made chairman of the joint committee, is a man of taste and of particular sympathy for the landscape and recreative aspects of the problem. The admirable character of the report in this respect is in a great measure due to this circumstance. The engineering features of the scheme originated with Mr. Frederic P. Stearns, the engineer of the Health Board, and the design is the result of the studies of Messrs. Olmsted, Olmsted & Eliot, the landscape-architects for the Metropolitan Park Commission. Mr. Eliot, as a member of the Charles River Improvement Commission, was already thoroughly familiar with the subject.

The Charles River is a very crooked stream; it draining an area of about 200 square miles. It forms the southerly boundary of a portion of Boston, between the city and Dedham, and then, after a course of some thirty miles, again comes to the city from the westward, changing to an estuary at the dam in Watertown, expanding to a wide basin between Boston and Cambridge, and then flowing

through the heart of the city with the Charlestown district for its left bank. The Charles is now commonly taken to end at its confluence with the Mystic, off the Navy Yard, but in the old times its mouth was considered to be the entrance to the bay at Boston Light. The scope of the investigation covered the stream from the Waltham boundary down, directly affecting the four municipalities of Watertown, Newton, Cambridge and Boston. The report states that no treatment of the stream can be entirely satisfactory that does not include the region above the Waltham line. That portion of the problem, however, is comparatively simple. Not so, however, the last half-mile which is included within the scope of the investigation. Here the conditions had been so complicated by the planless possession of the stream by the railroads entering Boston from the northward, which in the past few months have made new and extensive encroachments here, that it seemed hopeless to attempt to deal with this section for the present.

The scheme proposed is radical and comprehensive, and is also the most economical one possible. Hamburg, with its beautiful Alster basin, furnishes the precedent, and as the conditions of the problems are, in many respects, identical, the example of the German city is closely followed. At Hamburg a small and shallow stream was dammed, forming a charming lake extending far back into the country, whose waters are very extensively used for pleasure purposes.

The Charles presents a still nobler opportunity. It is proposed to dam the river between Boston and Cambridge from the handsome pleasure-ground, the Charlesbank, across to the contemplated new one in East Cambridge, called "The Front." This dam, a causeway 100 feet wide on top, will provide a broad new bridge, and will have a lock for navigation. Above is the ample basin that comprises what is left of the old Back Bay. By excluding the tide it will become a fresh-water basin, and by maintaining its level eight feet above low water, and two and a half feet below high-water mark, it will furnish the simplest and cheapest means of improving for park purposes or other uses the extensive marsh-grounds bordering the stream. There are a thousand acres of such lands whose drainage-level would thus be lowered and made suitable for park treatment at comparatively small cost. The salt-marshes, for instance, would be made fresh, so that they could be planted with trees and shrubbery, with pleasing vegetation clothing the shores to the water's edge. Whoever has seen the Teltauer Anlagen, near Berlin, on the banks of the Spree, or the parks of Chicago, will perceive what beautiful scenery can be easily created on these level lands adjoining the Charles, particularly when we consider their superior attractiveness in the possession of more varied horizon.

This form of treatment also offers the best safeguard against freshets by furnishing a broad water surface whose level would be but slightly raised by the heaviest flood. The Back Bay Fens improvement was originally designed to perform a like surface for the Stony Brook water-shed, and has often justified the prophecies of its value. The dam proposed also furnishes complete protection against inundation by the exceptional tides which sometimes rise on the coast. It is estimated that, in the lessened expense for retaining-walls made possible by excluding the tide, the dam will save something like four times its cost. It is proposed to treat the upper reaches of the improvement in a more natural and, at the same time, less costly way by beaches and sloping shores.

Cambridge has already entered upon an extensive scheme of park improvement, the most valuable feature of which is the river-bank, which has been taken for a distance of about four and a half miles, to be laid out in esplanades, playgrounds and parkways. That side of the river, by reason of its pleasant exposure, is peculiarly adapted to development as an attractive residence section.

On the Boston side the Park Department has under consideration a plan for the extension of the Charlesbank—the

completed portion of which forms a local pleasure-ground of inestimable value to the neighboring tenement-house quarter—as a river-side boulevard as far up stream as the river retains its character as a broad basin. The legislation that authorizes this restricts filling in the rear of Beacon Street to a width of 100 feet. As this limitation would leave the unattractive back yards of Beacon Street abutting on the esplanade, the joint board favors a creation of new land that would permit the erection of an additional line of houses or other buildings facing the river. The reason for this is not only to give a worthy frontage on the basin, but to furnish the means for meeting the cost of the improvement by the profits on the sale of the new land. The commonwealth's real-estate operations of this character have always been very profitable.

This proposition has naturally met with intense antagonism from the residents of the water-side of Beacon Street, whose celebrated river view would thus be cut off. The execution of this phase of the project is in doubt. The grand basin has the capacity of making one of the noblest features in the plan of Boston, and it is important that the most should be made of it. If the new frontage cannot be secured, then, if possible, in compensation for retaining their privilege, the Beacon Street residents should be required to give their houses an aspect on their water-side worthy of the prospect which they so highly esteem.

The landscape-architects consider the plan in three divisions. First is the present "fresh-water section," above the dam in Watertown. The stream here winds tranquilly through open meadows bordered by low bluffs. The treatment here adopted is a parkway with drives on either side of the stream, except at a few places where local conditions break the continuity on one side or the other. The middle division is considered as the "marsh section." Here extensive areas of salt-marsh border the stream. These marshes present good opportunities for pleasure-grounds of considerable extent. Chief of these, situated in the Brighton district on the Boston side, is the celebrated Longfellow meadow—the spot where the Charles is described in one of the poet's verses as writing the letter S. This is in full view of the Longfellow mansion, over the Longfellow Memorial garden. Adjoining the meadow is the spacious tract presented to Harvard University as an athletic ground by Mr. H. L. Higginson, and called the Soldiers' Field. Forming the south-easterly side of the meadow, the plan provides for a speedway a mile long, with a course straight and level, unbroken by cross-roads, and easy of access.

The third division is the "basin section," which begins at a proposed new bridge near the present one from Cambridge to Cottage Farms. The discontinuance of the latter is recommended. The new bridge would connect directly with the new Boston parkway and the Boston park system. This bridge, marking the entrance of the river into the basin, would command a magnificent view down the whole length of the basin to the State House crowning Beacon Hill. Above this bridge the shores would be irregular and mantled with trees and shrubberies, except where it might be desirable that the public should reach the water at beaches or boat-landings. Below the bridge the shores would be treated formally with low walls or curbs of stone, broken by bastions affording water views, landings for steam or electric passenger boats, docks for row-boats and the like. These low walls are made possible by the exclusion of the tide and the practically constant level of the water, which even in a freshet would rise but a few inches. The effect above and below this bridge may be compared to that of the lagoon and the basins at the World's Fair.

The landscape-architects well say that this project, so far from being extravagant, is governed by considerations of real economy. For nowhere west of the State House can so much well-distributed open space be had for so little money as on the banks of the Charles River. The total area of the open water-way along the eight miles of

the river from Waltham to the basin is about 300 acres. Many cities have been compelled to pay immense sums of money for open spaces no larger than that which nature has freely bestowed upon the cities of the lower valley of the Charles. If the crowded districts of the valley care to reap the advantage of the free gift of nature they have only to take possession of the banks of the river.

For damming the river the consent of the national Government must be obtained. As it would improve the navigation and make the arsenal at Watertown more accessible, and as the harbor would not be injured, this consent should be forthcoming. Without a dam the improvement would be less satisfactory and more expensive, but the landscape-architects urge at all events the acquisition of a continuous river-bank reservation, whether the river retains the character of a tidal estuary or not. They, as well as the joint commission, consider the problem from a broad, humane point of view which makes the general public welfare paramount to all other considerations, and emphasize strongly invaluable service which the stream can render when developed to its best possibilities as a drainage channel, an open space, a parkway, a chain of playgrounds and a boating-course.

Oaks in May.

ELEVEN species of Oak and one or two hybrids are indigenous to the vicinity of Chicago. Those mentioned in this article and the hybrid *Quercus Leana* are found in the valley of the Desplaines River, where the different kinds are most numerous within a limited area.* Seven of them occur in a small piece of woodland at Willow Springs, and the hybrid and the Chestnut Oak are found but a mile or two away. The soil and other conditions are here sufficiently varied for the trees to grow near each other, and their proximity makes the comparison of their characteristics easy. When the Oaks are putting forth their leaves and flowers, usually about the middle of May or a little later, these woods are very attractive, the colors of the foliage are less intense than those of autumn, but the great range of tints and the varied aspects of the unfolding leaves give a striking individuality to nearly every kind. A little familiarity with the Oaks in early spring enables one to readily distinguish the different species. Then gray and silvery tones of color are added, and impart to the foliage a delightful mellowness. The surrounding air partakes of this softness, and the twigs and tender leaves and flowers are enveloped in a misty light.

Some of the biennial fruited species are usually the earliest to open their buds, and their leaves may be considerably developed when some of the annual fruited ones are starting. With the later forms the Hickories and the Walnuts add their different shades of green, yellow and red fire; they flourish under conditions favorable to some of the Oaks, and it is rare to find the Red Oak in any part of this region without some of the Hickories near at hand.

The young leaves of the Black Oak (*Quercus tinctoria*) are usually red, the freshest of them nearly scarlet. The foliage retains this tinge for some time, so that the tree is now the most intensely colored of any of the group to which it belongs. The deeply divided leaves are on relatively long petioles, which are at first bent down, but soon spread out from the branches. The fresh twigs are yellowish green, some of them stained with red, and are covered by a yellowish russet down. The leaves are whitened beneath with a pale tomentum. The hairs are often very dense on the upper surface, and the foliage assumes a gray look, around which the misty light plays with a beautiful effect when the trees are between the

*In some of the maps of the early French explorers of this region, as those of Charlevoix and D'Anville, the carrying-place between the Chicago River and the Desplaines was called the Portage of the Oaks ("Portage des Chênes"), thus seemingly recognizing the Oak as giving character to the landscape.

observer and the sun. The divided leaves give the foliage a feathery appearance, and as the long yellow aments are also easily stirred, a light wind gives the tree a shimmering appearance like that of rippling water under subdued sunlight.

The Scarlet Oak (*Quercus coccinea*) has nearly the same general appearance as *Quercus tinctoria*. The leaf-blades are, however, shorter, thinner and less hairy at this time. They are quite purple when the buds first expand, but soon take on a light-green color. The foliage has the same feathery look presented by that of the Black Oak, but with a lighter color as a whole.

The young leaves of the Red Oak (*Q. rubra*) are greener than those of the Black or Scarlet Oak, though often stained with purple. They are smoother, much less deeply lobed from the first, and foreshadow their permanent form more nearly. They droop considerably on the long green petioles, and seem more abundant at first than those of the other Oaks, for the smooth brownish branchlets are soon hidden by the leaves and long aments which hang in bunches like tassels. The young shoots are also green or slightly dyed with red, and are more slender than those of the Black Oak, and the foliage has not the airy grace which characterizes that of Oaks with more finely divided leaves. The leafage takes on a green and smooth appearance quite early in its development.

The leaves of the Laurel Oak (*Q. imbricaria*) or Shingle Oak, as it is more commonly called here, are very narrow and almost linear at first, with their edges so strongly revolute that they almost touch each other. They are slightly hairy, the ground color yellowish green, with a purple tinge. The fresh twigs are flushed with red on the upper side where most exposed to the light. The older twigs are grayish green, but the color of the bark on the branches is so dark as to impart to the spray a dusky hue. The young leaves stand out stiffly from the ends of the branchlets, studding them with sharply outlined, stellate clusters. Being so narrow, the foliage is very open, and one can see through the tree-top in almost any direction, so that the tree has an appearance quite distinct from other Oaks.

The most abundant of the annual-fruited Oaks is the White Oak (*Q. alba*). The coarsely toothed young leaves are rather abortive in outline, and their short petioles bend abruptly down, so that the ends of the shoots are shielded with bunches of leaves which almost hug them. The leaves are softly pubescent, and stained with purple and pink, but they are paler and more downy beneath. The new shoots are also reddish and downy, and they grow so rapidly as to become two or three inches long when the leaves have attained scarcely more than an inch in length. When the pale down on the upper leaf surface is dense, the trees have a hoary look as if covered with the rime of the early morning. The soft appearance of such trees is greatly intensified in the bright sunlight, and they assume a peculiar tenderness of tint. The smooth and pale bark on the newer twigs of preceding years contrasts prettily with the color of the leaves. The white flaky bark of the older branches adds to the beauty of the tree at this season.

The leaves of the Overcup Oak (*Q. macrocarpa*) are at first slightly hoary-downy, but soon become smooth and yellowish-green and glossy above, but they are pale green and duller beneath. They are narrowly oblong, and are more deeply lobed than those of the White Oak. The mesophyll of the larger lobes is very full and plaited into ridges between the straight veins, which, being of a deeper green, show effectively in the midst of the bordering tints of yellow. The leaves spread out from the recent shoots somewhat horizontally, and the aments hang down beneath them in thick bunches. The twigs of the two or three preceding years are stubby and covered with a pale-brown bark. The bark of the older twigs and branches is thick and roughened by corky ridges. This dark rough bark is in marked contrast with the yellowish color of the

leaves, and, showing prominently, gives to the tree a rather dark or grayish black appearance.

The Swamp White Oak (*Q. bicolor*) resembles the Overcup Oak considerably at this time, though its oval, smooth and glossy leaves are less divided. They spread out from the twigs in a similar manner, and the mesophyll between the straight veins is also full and wrinkled. They are yellowish green, but with a stain of purple, which is more pronounced toward their tips. The young shoots, covered with a green bark, make a quick growth, and are sometimes four inches long at the time of flowering. The general color of the foliage is yellowish green, but with a cast of brownish purple.

The Yellow Oak (*Q. Muhlenbergii*) bears light-green leaves, the newest tinged with purple, especially beneath, though the upper surface is often stained with a greenish yellow varying to a pale yellowish brown. They are rather oblanceolate in form, smooth and a little glossy above, pubescent beneath. The straight veins and toothed or coarsely serrate margins give them individuality from the first and mark them as members of the group of Chestnut Oaks. The petioles and fresh twigs are brownish. The leaves are crowded at the end of the branchlets, giving to the foliage a tufted look. It is open as a whole, calling to mind the Shingle Oak. The purple tint on the lower surface of the leaves is quite marked, and frequently persists near the ends till they are three or four inches in length. The foliage is light-colored when taken in a mass, especially in the bright sunlight, and has a yellowish cast of color resembling that of the freshly starting Hickories.

Englewood, Chicago.

E. J. Hill.

Foreign Correspondence.

London Letter.

JOHNSON'S GARDENERS' DICTIONARY.—The new edition, revised and enlarged by Mr. Wright, of the Kew Herbarium, and Mr. Dewar, curator of the Glasgow Botanic Garden, is now complete and is issued in one volume by G. Bell & Sons, the publishers. It is in every sense a first-rate book, thoroughly reliable, both as to its botanical and horticultural qualities, as I am able to testify from a knowledge of the book itself and of the men who are responsible for this revision. The *Genera Plantarum* of Bentham and Hooker has been followed in respect of genera, and the nomenclature as to species is that which is in use at Kew. It is only at such an establishment as Kew that a work of this kind could be prepared. The plan of the book is an alphabetical arrangement of all the names of plants, scientific and vernacular, insects which affect them, and plant-diseases generally, tools used in their cultivation—in short, everything that a gardener is interested in professionally. The authors are to be congratulated, and so, too, are the gardeners, for whom their work has a special value.

PLANT-COLLECTING IN BORNEO was the subject of a lecture before the Royal Horticultural Society last Tuesday by Mr. F. W. Burbidge, M.A., now curator of the Trinity College Gardens, Dublin, and once a successful traveler and collector. Mr. Burbidge unites a wide knowledge of plants with a keen enthusiasm in all matters connected with them, and, what is, perhaps, of at least as much importance, a felicitous, engaging style when he sets out to write or talk about them. His book, *The Gardens of the Sun*, is delightful reading and full of interesting information; he is an active writer upon horticultural subjects, and he can lecture well, as was shown by the distinguished audience he had last Tuesday and their staying to hear him out. Borneo must be an exceptionally rich field for the botanical collector; indeed, all Malaysia teems with plants of the greatest interest and value, both to the botanist and horticulturist. One of the best things in the lecture was Mr. Burbidge's recommendation that in future a plant-collector should accompany every great scientific expedition from England.

EXAMINATIONS IN HORTICULTURE.—The Royal Horticultural Society has taken a leaf out of the book of the Science and Art Department and proposes to hold examinations in horticulture on May 1st next in "centres" all over the country. Candidates will have to pay a small fee, they must be of a limited age, and they will be examined in what is termed elementary practical and scientific horticulture. They will be awarded certificates if their answers are satisfactory, and these certificates will, it is supposed, be of value to them afterward in procuring situations. We have also a school of horticulture at Swanley, which professes to teach all that a man or woman (there is a woman's section) need know to be able to manage a garden. Scholarships are awarded, but no wages are paid. The fee for women is £70 a year. In the prospectus it is stated that women who have been trained at Swanley have afterward obtained head-gardeners' situations worth twenty-four shillings a week.

ENGLISH FORESTRY.—It is quite as easy for people to lose their reason over forest-protection as over tree-spoliation. While on the one side there is a general complaint that there is no good forest-management to be found anywhere in Britain, on the other we have vigorous protestations from what may be called the true protectionists against any attempt to make our national woods and forests worthy of a nation which professes to be practical. A great many people have the same objection to cutting down an old tree as they have to pole-axing old worn-out horses, and they would sacrifice posterity to sentiment by allowing every tree to stand till it crumbled through old age. If a forester who understands his art sets about clearing away worthless and decayed trees to make room for young and healthy ones, he is sure to bring about his ears the protests of the old women who "love old trees and cannot bear, etc." It is hard up-hill work to teach either the masses or the classes that the systematic cultivation of trees cannot be managed without the use of axe and saw as well as spade.

AURICULAS have a limited number of admirers, and those few who are enthusiastic cultivators of them are looked upon as men with odd tastes. This was made clear to me last Tuesday when the National Auricula and Primula Society held its annual exhibition in London, and attracted a great number of visitors, most of whom, however, were evidently unable to find any attractions in many of the choicest of the fanciers' exhibits. "Ugly green things"; "those moldy plants," "queer-looking, not a bit like what one expects and admires in a flower,"—such were the expressions one heard from the uninitiated when looking upon the precious gray-green or white-edged varieties shown by such masters of the cult as the Rev. F. D. Horner, Mr. B. Simonite and Mr. Douglas. The self-colored section came in for more admiration, as also, of course, did the species of Primula, and especially the gaudy Polyanthuses. The plants generally were remarkable for exceptionally good foliage rather than for good, well-formed, evenly marked flowers. On the whole the exhibition was a success.

BOUGAINVILLEA GLABRA SANDERIANA.—A group of plants bearing this name was exhibited by Messrs. F. Sander & Co. at the last meeting of the Royal Horticultural Society, and was awarded a first-class certificate on account of its extraordinary floriferousness. Plants grown in four-inch pots had stems a yard or so long wreathed from top to bottom in bright rosy mauve flower-bracts. Both the type and *B. spectabilis* are grand plants when in flower, but they do not flower, under glass, at any rate, with that freedom which is desirable. This is specially true of *B. spectabilis*, the glory of most tropical gardens, but a disappointing plant in a stove. It is flowering fairly well this year at Kew, in consequence, no doubt, of the extra ripening it got last summer, but, as a rule, it misses. *B. glabra* is not quite so bad as this. But with this new variety I understand that the difficulty is to get the plants to grow to any size before they burst into bloom.

ALOCASIA WATSONIANA was awarded a first class certificate by the Royal Horticultural Society this week, a fine specimen of it being exhibited by Messrs. F. Sander & Co., who introduced it last year from Sumatra. It has irregular cordate leaf-blades nearly a yard long and a foot and a half wide, on stalks three or four feet high; the color of the blade is deep violet-purple on the reverse side, the upper surface being olive-green, shaded with purple. It is a very handsome stove-plant Aroid, and is quite distinct from *A. Putzeysii*, with which it was at first supposed to be identical.

EURYCLIS SYLVESTRIS is a handsome bulbous plant from tropical Australia, and might be called the Old World representative of *Eucharis*. It has large kidney-shaped bright green leaves on long stalks and a tall stout scape nearly two feet high bearing an umbel of about twenty pure white flowers, nearly as large as those of *Eucharis grandiflora*, and not unlike them in shape. Plants of it are now in flower at Kew. It is an old garden-plant, but rarely seen in cultivation now.

PHALÆNOPSIS TETRASPIS is now flowering freely at Kew, and a plant of it was exhibited before the Royal Horticultural Society last Tuesday, and received an award of merit. It is evidently easily grown, and flowers as freely as the best of the species in cultivation, plants which when introduced last year from the Andaman Islands to Kew were quite small and weak, being now strong, healthy and in flower. The flowers are like those of *P. speciosa*, but pure waxy white, and fully two inches in diameter; the labellum is thick, blunt and fleshy and covered with soft white hairs. This species was first discovered by Thomas Lobb when collecting for Messrs. Veitch, but it was not introduced till 1881, when Mr. Bull obtained living plants of it. So far as I know, it had never flowered in England till last year, when several plants among a consignment received at Kew from the Andamans, flowered, and a figure prepared from them was published in the *Botanical Magazine*, t. 7321. I have heard of a specimen showing twelve flowers on a scape.

CÆLOGYNE SWANIANA is a new Orchid in the way of *C. Mas-sangeana* both in habit and flowers, the principal difference being in the color of the latter, which have white sepals and petals and a red-brown lip striped with pale yellow.

LÆLIA CINNABARINA is a very handsome Orchid when grown and flowered well. Plants of it shown at the meeting of the Royal Horticultural Society by Mr. Appleton, of Weston-super-Mare, were so attractive that the committee awarded them a first class certificate to call attention to the merits of an Orchid which has been in cultivation over fifty years, but is still neglected. One of Mr. Appleton's plants bore three spikes, one with ten, another with nine flowers, and each flower was fully four inches across, and of the brightest orange-scarlet color. Grown thus it is superior to its ally, *L. harpophylla*.

ROSE CRIMSON RAMBLER attracted much attention last Tuesday, Mr. Turner sending a large number of big plants of it covered with flowers to the meeting of the Royal Horticultural Society. This Rose will become a universal favorite on account of the bright color of its flowers and its extraordinary free-growing, free-flowering nature. I have told its history in previous letters. It is pre-eminently a plant to be kept in mind by every one interested in good hardy shrubs for the million.

CARNATION URIAH PIKE is being largely exhibited and advertised in England as a Carnation which combines the color, form and fragrance of the old-fashioned Clove Carnation with the grass and habit of the best of the Tree Carnations. It is offered by Mr. James Pike, of South Acton, London, who says of it: "It is a lovely crimson-maroon in color, splendid habit, a vigorous grower and most profuse bloomer, strong clove-scented, and throwing its perfect-formed flowers on long stems, which is an indispensable quality; the calyx does not split, and resists disease. Its lasting proclivities in a cut state are marvelous." I saw a group of it last week, and can endorse most of what is here said of it.

London.

W. Watson.

New or Little-known Plants.

A New Bumelia from Mexico.

AMONG the many novelties brought back by Dr. Edward Palmer, from Mexico, in the year 1891, are specimens from a large and handsome tree which I have named *Bumelia Palmeri*.*

This tree (see illustration on page 196 of this issue) has an immense top, resembling a wide-spreading Oak, and grows to the height of fifty feet or more, with a large trunk fully three feet in diameter. The bark is rough and corky; the leaves are large and shining, and the flowers are produced in great abundance in the axils of the leaves. The fruit, which is a drupe, is about the size of a plum; its pulp, when ripe, is much like that of the grape, which it resembles also in taste, but when dried it is more like the prune; it is very much used as an article of food, both in the fresh and dried state. The dried fruit is to be found in the markets at Culiacan. The drupe, when ripe, is black, with a green pulp, which comes off free from a brown lucid seed; the kernel is said to be bitter.

The fruit is reported to ripen in April and May, although Dr. Palmer succeeded in finding a single ripe fruit as early as November 10th. The trees are rarely destroyed and are found scattered over the rich plains about Culiacan. It seems to be well known to the Mexicans, and they call it "Bebalamas." This is another case in which a tree well known in Mexico has been overlooked by the botanist.

Very little is known of the Mexican species of *Bumelia*, and still less of their fruit. Up to 1881, when the second volume of the *Biologia Centrali Americana* appeared, only five species had been reported from this region. Mr. Hemsley, in his enumeration, credits eleven species to Mexico, one of which is undetermined, and five are described for the first time. One other species, it seems, should have been added to these, namely, *B. lanuginosa*. Two species have recently been described by Captain John Donnell Smith in the *Botanical Gazette* (*B. leiogyna* and *B. pleistochasia*), and one by Professor Engler (*B. Mexicana*). These, with the present species, swell the number of described Mexican species to fifteen.

Washington, D. C.

J. N. Rose.

Cultural Department.

Notes on Trees and Shrubs.

THE first three weeks of the month of March, this year, were warm and pleasant, and vegetation gave promise of early advancement. American Elms showed mature blossoms with ripe pollen in the fourth week. The last days of March and the first week of April were cool, with frequent frosts, and from the 9th to the 15th of April we had a cold, stormy time, with more or less snowfall every day. Since then the weather has generally been warm and pleasant, the last three or four days of April and the first two days of May proving uncomfortably warm, the 2d of May being the hottest day recorded for this season of the year during many years. The cool weather of early April proved an effective check to further rapid growth, but the growth in some cases had already so far advanced that the cold storm appeared to be the cause of a good deal of damage. Many herbaceous plants, like *Anemone Japonica* and *Hemerocallis*, now show the brown and dead leaves or tips from the effects of too early exposure, and even the tips of the growths of some trees and shrubs have a brownish tinge. It is not often that the native early-flowering trees or shrubs fail to produce fruit through the effects of late frosts. This year, however, such trees as the American Elms are almost fruitless when compared with the abundance of other years,

* *Bumelia Palmeri*, Rose, n. sp. A large tree, fifteen metres high, .9 to 1.5 metres in diameter, glabrous throughout; leaves, alternate, oblong to obovate, 6.2 to 11.2 cm. long, including the petiole (10 to 15 mm. long), obtuse, shining above, pale beneath, with a close, silky pubescence; fascicles about 15-flowered; pedicels 6 to 8 mm. long, glabrous; sepals 5, oval, less than 2 mm. long, obtuse, strongly imbricated, scarious margined, glabrous, corolla white (?), about 2 mm. long, 5-parted; lobes oval to oblong, obtuse, each with two lateral appendages; appendages acute, narrower and two-thirds the length of the lobes; stamens 5; staminoda oblong, obtuse, subentire, smaller than the corolla lobes; ovary glabrous, 5-celled, 40-veined; drupe oblong, 16 mm. long, truncate at apex, black, 1-seeded; seeds lucid, spherical, 10 mm. in diameter, with an impressed scar; albumen none.—Rich plains, Culiacan, August 27th to September 15th, 1891. Palmer. No. 1513.

although there was no appreciable diminution in flowering, as these trees bear very regularly every year. Even the early-flowering Willows, like *Salix discolor*, which are usually prepared for all kinds of weather, are in many cases only developing fruits or capsules on the most sheltered side of the catkins, the other side being barren.

The mid-April storm proved disastrous to the swelling flower-buds of *Prunus Davidiana* and to the beautiful *P. pendula*, so that these little trees were almost without a blossom. *P. tomentosa* also suffered a good deal, and there was little bloom on the plant. The later-flowering Cherries and Plums, however, seem to have suffered no injury, although the great heat has caused the blossoms to be of short duration. The past winter has, on the whole, not done so much injury to shrubs as might have been feared. An abundance of snow was, no doubt, of much value as a protection.

Corylopsis pauciflora was badly killed, as is generally the case with this beautiful shrub unless protected. On a large plant the only parts which survived, and which bore an abundance of flowers, were a number of stems that had been bent to the ground and covered with soil. These branches were uncovered late in March, the first flowers opened about the 18th of April, and the last of them were fading away about the 4th or 5th of May, by which time the leaves were becoming well grown. Although not hardy in this climate, except in an exceptionally sheltered situation, it is well worth cultivation, and protection in winter, on account of the abundance of pretty pale yellow, bell-shaped flowers which are regularly produced. Its slender twiggy stems are easily bent in any position for covering. So far as known, it has rarely borne fruit in this locality. The fruit resembles that of the Witch-hazel, *Hamamelis Virginiana*, to which the *Corylopsis* is closely allied. That the plant will thrive in New England, is shown by the photograph in vol. v., page 342, of *GARDEN AND FOREST*, of a fine bushy specimen growing in Dr. Hall's garden at Bristol, Rhode Island. *C. spicata* is another species, introduced from Japan, which is a great acquisition in all gardens where it proves hardy. A few flowers were produced here for the first time this season. The flowers are more beautiful and interesting than those of *C. pauciflora*, but, unfortunately, the plant seems even less hardy. The blossoms are of a richer light yellow color, and are produced in much longer racemes, each bearing from half a dozen to a dozen flowers. These flowers have a very sweet, though not very strong, odor, somewhat like that of cowslips, though also reminding some persons of violets. The plant has much stouter branches and in every way is larger than *C. pauciflora*. Its blossoms at about the same time, but, unless very carefully protected, it is not likely to give much satisfaction in a climate as severe as that about Boston. Further trials are necessary, however, before its true value is known, as the plant is yet very rare in this part of the country.

Arnold Arboretum.

J. G. Jack.

Current Notes on Irises.

THE most striking Iris-flower in the garden this week is *Iris Saari lurida*, a variety from Cilicia, named from the river Sar, near which it is found. This is an *Oncocyclus Iris*, which at first glance might be mistaken for *I. Susiana*, but it is distinctly different both in plant and flower. The former is a somewhat smaller flower, and has large standards profusely dotted with dark brown and with very distinct reddish brown veins, from which radiate linings, becoming fainter toward the edges. The falls are somewhat narrower than those of *I. Susiana*, and are dotted and veined. The nearly black signal blotch is not so well defined as that of *I. Iberica*. The beard is composed of scattered yellow hairs beneath the claw.

Iris Bosniacæ is a new Iris, for which we are indebted to Max Leichtlin. This is a dwarf plant with short broad leaves, bearing on short stems medium-sized flowers of a pure, pleasing shade of lemon-yellow. It has very prominent orange crests and the claw prettily lined with brown. The standards are large and broad. It is quite the handsomest of the yellow dwarf bearded Irises.

Iris Statellæ, also in flower, is a variety of *I. lutescens*, from Sicily. It is a much handsomer flower than the type, being creamy white, with prominent standards and falls marked with brown lines and having a bright orange beard. The type from the south of France is also in flower. Baker says he cannot draw any definite line between it and *I. Chamæiris*. Neither does there seem much distinctness between them as garden-plants. With me the latter seems the more vigorous species. Another dwarf Iris this week in flower is the purple-flowered *I. aphylla* (*I. nudicaulis*, Lam.), with numerous synonyms, and

I. biflora, the *I. nudicaulis* of the *Botanical Magazine*—the former from eastern Europe and the latter from Portugal. The *I. aphylla* is of a reddish purple, and *I. biflora* a rich dark blue-purple. *I. Balkana* is still another dwarf species with cream-colored standards and whiter falls, which are stained lilac. This has a very prominent orange beard, and is an attractive species when in flower. None of the dwarf Irises show their full effectiveness except when well established and flowering freely in masses.

In my calendar of dwarf Irises I must not neglect to notice an Asia Minor species, sent out two years since, by Mr. Whittall, and as yet unnamed, but botanically said to be near *I. mellita*. This has very prominent standards of a rather dull yellow, prettily marked at the base with brown. The falls, lined on the claw and with prominent yellow beards, are of the peculiar color known to china decorators as gray-gold. Near the claw there is also a touch of light blue. Altogether this is

appear the Italian form, *I. Germanica semperflorens*, a dark purple flower, more reddish than the common type and dwarfer. This does not appear to carry out the expectations realized by its specific name, apparently given by Damman.

In the greenhouse has been flowering for some time the interesting Irid, *Marica cœrulea*, which is a handsome Flag from Brazil. It is an attractive greenhouse-plant, with Flag-like leaves nearly three feet tall, and out of flower is a desirable plant. It flowers on tall, winged stems, from which, near the tip, the flowers are borne on short peduncles with three or more flowers. These are fugacious, but attractive. They have the form of *Tigridias* (with bowl-like depressions), and the outer segments are clear pure blue, at base being veined with brown. The inner segments contain tints of blue, white and chocolate. This has flourished in the greenhouse among a general collection of plants, and I presume, from my experience, offers no cultural difficulties.



Fig. 35.—*Bumelia Palmeri*.—See page 195.

a very distinct plant, of which I shall soon have a small surplus to distribute to those interested.

The first of the taller Irises of the year are just appearing, the blue Iris *Sibirica*, var. *orientalis*, leading the van. This, which is also grown as *I. sanguinea* and *I. hæmatophylla*, is one of the hardiest and best of garden Irises, having short creeping rhizomes, which are not affected by an excess of moisture. The grass-like foliage has tints of red, and the plentiful flowers are dark blue. The falls have white signals lined with blue. A daintier-flowered tall kind is *I. oxypetala*, which is a variety of *I. ensata*; this has narrow foliage, and small, though beautiful, light lilac-colored flowers. The falls, which are narrow, are veined with green. This variety can be commended as a distinct beauty.

The first of the showy German Irises also are opening their flowers this week, *I. Germanica alba* and a larger-flowered hybrid of the same color being the first to unfold. With these

Diplarrhena Moræa is also an interesting Irid from Australia, which occasionally gives one a glance of its small white flowers, with purple styles, these lasting only a few hours. This plant is very tenacious of life, thriving in conditions of dryness which would almost discourage a Cactus.

Elizabeth, N. J.

J. N. Gerard.

Flower-garden Notes.

IN this most delightful season of the year herbaceous plants of all kinds are starting into growth, many of them with surprising vigor, and most of the hardy bulbous plants are in bloom. The Narcissus season is about past; only the later forms of the Poet's Narcissus are to follow, and these will not be over until after Decoration Day, at which time they are always highly useful.

It is a matter of regret that the many new forms of Spanish

Daffodils are so uncertain in their behavior. With us they promised well the first year, as the flowers were strong and of the most varied forms of any section, but the next season they did not do so well, and this year very few have put in an appearance. The conclusion that I have reached is that they are not to be depended on for our northern latitude, and intending cultivators should be cautious about planting them in any section until they have been fully tested. In sharp contrast to these Spanish kinds, the older and well-known sorts have been better and stronger than ever, and are among our choicest spring-flowering bulbs, as well as the most satisfactory. This is especially true of Countess of Annesley, all the bicolors, not omitting *M. Foster*, the latest of all in this section and as good as *Emperor* or *Horsfieldii*. The *Incomparabilis* varieties always do well, and so do the *Leedsii* and *Burbidgei*, for each have half the blood of *N. Incomparabilis* in their parentage.

Some very beautiful species of Tulip are now in bloom. *Tulipa Greigi* has been undisturbed for three years, and is as good as when first planted. It should be more often seen in the border, for it is one of the most ornamental of spring flowers. There came among the bulbs of *T. Greigi* a single bulb that has similarly spotted foliage and a bright yellow large flower, the outer petals of which are marked with crimson. This is unknown to me by name; it might be a yellow variety of the latter, but it is more robust, and I do not know of a yellow one being in commerce.

The *Mertensia Virginica* has been a pretty sight again this spring, and it seeds freely in the borders here. Young plants are coming up about the old plants and will soon have to be taken out, they are so plentiful. It is not often that this plant seeds in cultivation, or at least the plants do not usually come up spontaneously, but this may be accounted for in the fact that the borders are never forked over, all weeds being pulled by hand as the best way to avoid damage to the plants. This practice encourages the generation of self-sown seeds of all border-plants, and makes it easy to fill up gaps.

Pæonia tenuifolia is now in full beauty, and it is one of our best early spring flowers. Both the double and single varieties are good. They are rather scarce, and more expensive than the older herbaceous *Pæonies*, but are well worth having, as they soon form nice clumps and flower freely. The tree *Pæonies* will shortly follow, and these in turn will be followed by the herbaceous kinds. This is a well-marked period, for as soon as the herbaceous *Pæonies* open their flowers the rose-bugs will be here, and there will not be more than a day or two of difference either way. If these pests would but stay away a week or so, the *Pæonies* would have a chance to show their full beauty, but we know no way to prevent their coming.

Aside from the *Funkias*, there are very few good border-plants with variegated leaves that are hardy, or will keep their color all the season. An old plant, *Centaurea nigra variegata*, not often seen, would make a good edging to a border where such plants are desired. It is easily divided, and keeps its color throughout the season. Its habit is dense or tufted, the leaves being margined with bright yellow. If the flowers are kept cut off it improves the leaf-growth, and the blossoms are the least desirable feature, and easily spared.

Scabiosa Caucasica is a valued border-plant on account of its pretty lavender-colored flowers, a color rare in hardy plants. The plant is also rare in borders, due, I believe, to its dying out for some unknown reason. It has been suggested that *S. Caucasica* is a biennial, but it is a true perennial. It seeds freely, and a quantity of young seedlings generally spring up that will flower the same season if carefully transplanted in the spring. We grow our plants in a plot by themselves, as they are much used for cutting; at this time a quantity of seedlings are coming up.

Many hardy plants are of a very weedy nature, and insist on a great deal more space than was intended for them in the beginning. Many we could not well do without, so they must be forked out now when we can best determine a good place for them. The *Achilleas*, *Monarda didyma*, *Spiræa lobata*, *Helianthus rigidus*, *Boltonias*, *Anemone Pennsylvanica* and many others will suggest themselves as being offenders in this way. These need annual thinning out to keep them from appropriating the whole border. So much for permanent border-plants; but we must now prepare for those of annual duration, for these are indispensable. Asters, Stocks, Zinnias, Gladioli, Mignonette and other old favorites will have to be dotted in to take the place of those that flower early and then die down. It is never safe to begin setting these out before the end of May in this section, but they should now be in readiness for planting then. Annuals should be carefully hardened off in cold frames. Cannas, Geraniums and all plants of this description

pay well for a careful hardening off also, for if taken out of the greenhouse and put in the open sun they are apt to scorch and look rusty for a week or two after being set out.

South Lancaster, Mass.

E. O. Orpet.

Spring Flowers in Vermont.

THE spring of 1894 has been a very peculiar and trying one for hardy perennials here in Vermont. The early warm spell in March took about all the frost out of the ground, and in sheltered positions plants started into growth. Until this time plants were in excellent condition, and the extreme cold weather had apparently not injured them in the least. After this came the most trying time of all. The ground froze to a depth of three and four inches, and we had a course of warm and cold waves most injurious to plant-life. Some of the native species, such as *Uvularia grandiflora* and *Arisæma triphyllum*, in exposed positions were entirely killed. Several species of native Ferns were also killed. In nearly every instance where a covering had been given the plants in the fall, sufficient to prevent the frost from coming out, no great injury was sustained at first, but in almost every case where, for experiment, the covering was removed during the first warm spell, the injury was severe, and in several instances fatal, even though the plants were well established and had stood the winter perfectly up to March 5th.

Lilium Brownii is a tender species here, and though not difficult to grow when established, it will not stand our winters without protection. The same may be said of *L. Parryi*, and most of the *Erythroniums* of the Pacific coast also need some protection in so trying a spring. *Fritillaria pudica* will stand almost anything in the way of frost, without protection. All the *Fritillarias* from the Pacific coast do well here and increase in size with cultivation. They may not show themselves above ground the first year, as is often the case with some of the Lilies, but they establish themselves for a good start the second year, and apparently make up for lost time in size and vigor.

Draba Arizoides was among the first plants to flower here. It grows three to six inches high, with one to six umbels of pretty bright yellow flowers. The leaves are quite attractive and are clustered at the base. Among other plants which flowered in April were several of the *Chionodoxas*, *Trillium nivale*, *T. recurvatum*, *T. erectum* and *T. grandiflorum*; *Iberis stylosa*, *Viola Zoyzii*, *Fritillaria pudica* and *F. lilicea*; *Primula spectabilis*, *P. minima*, *P. Wulferiana*, *P. denticulata* and *P. cortusoides*; *Arabis alpina*, *Anemone vernalis* and *A. nemorosa*; *Viola blanda* and *V. rostrata*; *Claytonia Virginica* and *C. Caroliniana*; *Erythronium albidum*, *E. Americanum* and *E. grandiflorum*; *Arabis albida foliosa* and *Mertensia Virginica*.

Charlotte, Vt.

F. H. Horsford.

Sweet Peas.—Many persons make a mistake in sowing their Sweet Peas too thickly, and the consequence is the plants are spindly, and produce a poorer quality of bloom than when full space is given to each one. I prefer to sow in wide drills, somewhat thinly. If the seed comes up thicker than we think is required, we can thin out the young plants when about an inch high. That this practice pays we have had abundant proof. It has been stated that one plant of the variety *Emily Henderson* has produced more than a thousand flowers in a season. We have never tested individual plants, but last year we kept a record of the spikes cut from a row sixty feet long, partly composed of the *Eckford* varieties and partly of good mixed sorts. The first flowers were cut on June 11th, and the last on October 20th. The number gathered for each month were as follows: June, 2,000; July, 17,600; August, 18,000; September, 6,400; October, 3,500; total, 47,500. Besides this large numbers went to seed, and probably the row would have yielded 60,000 spikes if it had been carefully picked over. It pays to go over the rows as often as once a week, at least, and pick off the seed-pods. If they are allowed to remain, the flowering season will soon come to an end. Thorough soakings of water are necessary to secure the best flowers. Some liquid-manure can be added to each watering, and twice a week is none too often to give the plants a good soaking. Before flowering commences it is well to mulch a space of about eighteen inches on each side of the rows with some spent mushroom-manure or other short manure. We have seen hay and grass used for this purpose, but the mulch is better, because it not only keeps the soil cool and damp but furnishes the plants with the food they need.

Violets.—New runners inserted about the middle of April will now have made fairly good roots, and the sash should be thrown off of them on all evenings when there is no likelihood

of frost or heavy rain, and during the day-time when it is cold or partially cold. The plants must be shaded from the bright sun until they are well established in the boxes or pots where they have been placed. It is still the custom of many growers to divide the old plants and set them out in single crowns with plenty of roots attached, and fairly good returns can be had on this plan. We have given it a trial for two years past, and find that we have larger plants and smaller flowers of poorer colors than when runners are used. It should not be the object of the grower to produce large clumps to lift in the fall. A small plant with one good crown will give more flowers and of finer quality in proportion to the ground it occupies than a large one with several crowns. When the plants are smaller there is less liability to injury from damp in the heart of the plant, and that is a point of much importance during the dark winter season. We usually plant out our runners early in June, after the summer bedding is completed. The ground should be thoroughly manured, and if a moist location is to be had it is much better. The planting should be done after a rainfall, and the balls of earth taken up should be moist, and the plants themselves firmly set in the ground. When the weather proves very dry during July or August it is well to apply some light mulch to the plants, like grass sweepings from the lawn or spent mushroom-beds, either of which will answer well. If the "spot" shows itself on any variety at planting time, it is well to isolate this from the other kinds, and if, after planting, this dread disease continues, it must be attacked in its early stages, or the plants will soon be past redemption. For keeping the disease in check I have more faith in carefully picking off every affected part and keeping the roots moist than in Bordeaux mixture or other poisons.

Taunton, Mass.

W. N. Craig.

Correspondence.

The Beauty of Rural England.

To the Editor of GARDEN AND FOREST :

Sir,—We Americans are so often, and perhaps so justly, censured for our disregard of the wonders of our vast continent, and this indifference has been so often contrasted with the Englishman's devotion to his little isle, that one is tempted sometimes to look a little critically at the England of to-day in order to discover the secret of the charm which it has for those who visit her shores. It seems to be assumed that the beauty of rural England, so perfect of its kind, that it is the embodiment of the poet's dream, has been created by its inhabitants in conscious obedience to the highest principles of landscape-art. But may it not be that this beauty has been slowly developed rather through obedience to that commonplace motive of self-interest, that natural desire to advance the material welfare of his own country which at present impels the American to convert his forests into timber, and to defile his streams with the refuse of the factory?

Mr. Nadal, in a late number of *The Century*, speaks of English scenery as suitable to the luxury and comfort of English country life. "It is appropriate," he says, "to the English flesh-pots." And, coarse as the phrase may sound, it has in it at least a germ of truth. The average Englishman dearly loves the soil, and all that springs from the soil. He is near to nature's heart in the literal rather than in the poetic sense. He loves country life, takes pleasure in horses and dogs; he has an instinctive delight in the fresh air, green fields and wide forests. This quality, rather physical than mental, he does well to preserve, since it tends to promote both healthfulness of body and serenity of mind. For his mental qualities he has a love of order and method, which shows itself in his square fields and close-clipped hedges. He delights in the thought of the material prosperity represented by the fields of waving grain and areas of rich woodland; he loves respectability and solidity. The sturdy Oak, with its wide-spreading branches and majestic strength, is dearer to him than the "immemorial Elms" with their commingling of delicate strength and tender grace. This love of growing things is universal, and naturally each individual strives to surround himself with the things he loves. The lord of the manor glories in his wide lawns and extensive parks. The peasant rejoices in the little square of scarlet Geraniums (always a square, with a circle of cobble-stones in the centre) which bloom about his cottage-door. The city corporations carefully guard the square little playgrounds so plentifully scattered throughout the thickly settled districts of the crowded city; while the window-boxes full of gay-colored flowers make glad the eye of the beholder as he walks through the dingy streets.

Time, too, has been the Englishman's ally in converting his

little island into a bower of beauty, for his father and his father's father have had the same tastes, and he is too conservative by nature to destroy without good reason that which has been consecrated by time. The genial climate, moist and warm, scatters the wild flowers on every highway, and even in the track of the plowshare, and covers the scarred ruin with luxuriant ivy. In truth, nature clothes with such tender beauty what man has sought to spoil that one is sometimes tempted to think that England is beautiful, not because of its inhabitants, but in spite of them; for the beauty of England is unquestionably an inheritance of the past. The present has little part in it; and should the modern passion for change there gain ground, its beauty is doomed to disappear, for there is little innate love of beauty in the English race. For centuries, agricultural interests were paramount, and in their steady devotion to these interests this great people has developed this special form of landscape-beauty. Now, manufacturing interests are in the ascendant, and should this same beauty stand in the way of their material prosperity, I fear they would destroy it as ruthlessly as we are destroying our primeval forests.

Thirty years ago Ruskin perceived the danger that threatened England, and in his own sad fashion raised his voice to utter a warning note. He had been speaking of the forests of mediæval France. "Now you cannot," he added, "have here in England woods eighteen miles deep to the centre, but you can, perhaps, keep a fairy or two for your children yet, if you wish to keep them; but do you wish it? Suppose you had each at the back of your houses a garden large enough for your children to play in, and with just so much lawn as would give them room to run—no more, and that you could not change your abode; but that if you chose you could double your income, or quadruple it, by digging a coal-shaft in the middle of your lawn, and turning the flower-beds into heaps of coke. Would you do it? I think not. I can tell you you would be wrong if you did, though it gave you income sixty-fold instead of four-fold. Yet this is what you are doing with all England. The whole country is but a little garden, not more than enough for your children to run on the lawns, if you will let them all run there; and this little garden you will turn into furnace ground, and fill with heaps of cinders, if you can, and those children of yours will suffer for it, for the fairies will not all be banished. There are fairies of the furnace, as of the wood, and their first gifts seem to be sharp arrows of the Mighty; but their last gifts are coals of Juniper."

But Ruskin, you will say, is a poet at heart, and therefore unpractical; but surely the London *Times* is sane enough. A year ago it published an editorial, commenting on the Englishman's attitude toward the climate. Fifty years ago, it said, when the interests of the nation were mainly agricultural, and its prosperity mainly depended on the products of the soil, fine weather invariably meant weather which was best suited to the growing crops, and no one thought of grumbling at the rain which nourished the ripening corn, or dared openly rejoice in the prolonged sunshine which withered its strength. Now, except in the immediate neighborhood of a few market towns, fine weather invariably means weather which most conduces to the enjoyment of the individual. A change so marked in the temper of a people is destined to have its effect sooner or later upon the face of the land. One conservative force is worth noting: So long as the American tourist spends his money royally in worshipping the beauty which the thrift of his English ancestors has helped to create, so long the same national thrift will help to preserve the beauty.

Orange, N. J.

A. McC. Hallock.

Early Wild Flowers in West Virginia.

To the Editor of GARDEN AND FOREST :

Sir,—The patches of woodland in this neighborhood are almost always on dry uplands. I do not know one marshy bit of woods within a radius of six miles. Almost all of these wood-lots are used at times for pasturage, and, as the trees are mainly Oaks and Hickories, hogs are turned in in the fall to feed upon the acorns and nuts that cover the ground. Cattle roam at will up and down the country roads, which are very tame and monotonous. There are no abandoned farms here, and cultivation is so close that few trees are allowed to remain in the fence-rows, and few bushes escape the browsing and nibbling of cows and sheep. Thus our roadways, instead of presenting a picturesque tangle of saplings and shrubbery, are bare and shadeless, except where bordered by wood-lots. The grass margins are kept closely cropped, and few flowers escape destruction.

Early in April we often visit a wooded hill, where we are sure to find the first wild flowers. Blood-root and Twin-leaf bloom together, and the hill for a few days is a beautiful sight, the countless numbers of pure snowy blossoms quite covering the ground. The Twin-leaf is in some demand as a cure for rheumatism, and Blood-root also is supposed to have medicinal properties, but no plant-gatherers except ourselves ever seem to invade this forest-sanctuary, which is in the heart of the largest belt of woodland in this vicinity.

Another secluded bit of woodland that has heretofore escaped the depredations of cattle and is rich in many flowers, a very large breadth of *Mertensia Virginica*, is now in bloom beneath its Oaks. As blue is a comparatively rare color in flowers at this season, one rarely sees such an expanse of azure carpeting as these flowers, crowded together in the rich soil, present on an April day. Most of the plants come into full bloom at the same time, so that the clear blue of the expanded blossoms pleases the eye by the purity of its tint when seen thus in the mass, and the setting of Red-bud and Dogwood trees that surround the outskirts of the plantation makes a charming wood-scene that would delight an artist.

Phlox divaricata, *Stellaria*, *Claytonia*, *Dentaria*, Early Larkspur, *Anemone* and *Columbine* abound. One chance on a stray plant of *Hepatica* now and then, but this is not common. Trailing *Arbutus* is unknown here, where the ground is a clay subsoil and the rocks are limestone. Eight miles away, in Berkeley County, the character of the country changes. The hills are covered with Pines and the soil is slaty. Here Trailing *Arbutus* grows sparsely, and many other wild flowers quite unknown to our neighborhood.

Shepherdstown, W. Va.

Danske Dandridge.

Societies.

For Uniformity in Naming Garden-plants.

IN our report of the convention of the Society of American Florists last year, we explained certain recommendations made by the Committee on Nomenclature, of which Professor Trelease is President, which looked toward the establishment of a uniform system for naming different species and varieties of ornamental plants. We have been requested by Professor Trelease to invite attention to this matter once more, and in publishing the following note we avail ourselves of the opportunity to express the hope that the commercial horticulturists of America will do all in their power to facilitate the labors of the committee:

At the St. Louis Convention of the Society of American Florists, last August, a resolution was adopted providing for the appointment of a committee to prepare a list of decorative plants handled by the American trade, for adoption as the official list of the society, under the following general instructions:

1. Natural species and varieties to bear the Latin names assigned to them in Nicholson's Dictionary, so far as they are named, except that where differences exist between the Dictionary and the Kew Index, now in course of publication, the name adopted by the latter is to be chosen. Species first published or reinstated subsequent to the date of the latter (1885) to be treated in accordance with botanical customs, especially that of the Kew Gardens. Any commonly used and well-known name displaced in the application of the rule, to be added as a synonym.

2. Florists' varieties, races and forms to be named in accordance with the custom of the American Pomological Society and the Association of American Agricultural Colleges and Experiment Stations, according to the originator or introducer, in the order named, the prior right to bestow a name upon each new introduction, but seeking to secure the uniform use of short, appropriate and neat vernacular names for plants of this class.

Considering the peculiar conditions which control the nomenclature of cultivated plants, substantially the same principles were sanctioned for general horticultural nomenclature by the Botanical Congress which met in Madison in the same month.

The preparation of such a list of decorative plants has now been begun by a committee of the Society of American Florists, which comprises some of the most intelligent members of the American trade; and to facilitate their work, each American dealer, who issues a catalogue including plants of this class, is requested without delay to send three copies of any catalogue issued within the last year to the chairman of the committee, Professor William Trelease, of St. Louis, Mo.

The nomenclature of florists' plants is much confused, and the only practical way of simplifying it appears to be to prepare such a list as is proposed, which, sanctioned by the society, will afford the means of securing uniformity in the catalogues; and any assistance rendered the committee will help in the attainment of this object.

Recent Publications.

An Island Garden. By Celia Thaxter. With pictures and illustrations by Childe Hassam. Boston and New York: Houghton, Mifflin & Co. 1894.

Mrs. Thaxter's garden is said to be famous all along the New England shore, and therefore it is worth writing about, even if it is only fifty feet long by fifteen feet wide. Monsieur Alphonse Karr wrote a much larger book than this, describing a tour around his garden, and he could have gone on in the same way and written half a dozen more that would have been equally entertaining and instructive. But, then, Monsieur Karr had a habit of making some correct statements in every chapter on subjects relating to the art of horticulture or to the sciences of botany or of entomology or chemistry on which it rests. The reader is lured along by his genial and sympathetic guide, who is a humorist, a poet and a philosopher by turns, but always observing sharply and recording accurately, so that while making a delightful acquaintance, he is acquiring a great deal of substantial information, and is encouraged in a hundred ways to use his eyes and investigate for himself. This is hardly Mrs. Thaxter's way. The testimony as to the charming character of her garden is quite unanimous, and yet we hardly discover why it is so attractive, from the description of it in this beautiful volume, unless, indeed, we consider the mistress of the garden as an essential part of it. In truth, the book is hardly so much a picture of the garden itself as it is of Mrs. Thaxter's emotions. No one was ever so absorbed in the cultivation of three or four square rods of soil. All the year through the garden lifts her into a constant ecstasy of delight. She is in raptures over the pleasure of hoeing and weeding, and even the slug and the cut-worm are glorified, since the garden elevates everything which comes into contact with it, whether the relation be friendly or hostile. In short, the book is a sort of rhapsody; at least, it is written in such exultation of spirit and with so many exclamation points on every page that one hardly expects to find in it cool statements, simple descriptions or any prosaic advice on practical garden subjects. And when Mrs. Thaxter does drop into details her counsel is to be accepted with caution. We should not advise a novice, for example, to sow the seeds of his annuals in January when he can have his flowers quite as early by sowing them a month later, nor would it be advisable for other persons to leave *Gladiolus*-bulbs in the ground during the winter, with the expectation that they would prove hardy and sprout in the spring, as they do for Mrs. Thaxter.

What the sympathetic reader will find in this book is a demonstration of the truth that the care of a few square feet of earth can be made a perennial source of genuine pleasure to its owner. This is a truth worth setting forth in every possible light and on every possible occasion, and this fair volume will serve a most useful purpose, we trust, by encouraging many other women to make the experiment and find how much health and pleasure can be derived from planting and watching and nursing into beauty the common annuals which can be purchased at any seed-store.

Childe Hassam is an artist of distinction, but, with one or two exceptions, the reproductions of his work in this volume will hardly satisfy any one who does not admire a riot of colors which are never seen on sea or land. Perhaps, however, the surprising character of these illustrations is appropriate to the somewhat excited style of the text, and the two may work together effectively in drawing attention to the cultivation of flowers as an absorbing and refining pastime.

Notes.

Last year more than 2,000 car-loads of beans, mostly Limas, were shipped from Ventura County, California. Merchantable beans on one ranch were raised at the rate of 1,000 pounds an acre, the entire product being 103 car-loads.

The third part of vol. ii. of the *Contributions of the United States National Herbarium* contains the conclusion of Professor John M. Coulter's "Manual of the Phanerogams and Pteridophytes of Western Texas," the earlier parts of which were noticed in these columns as they appeared.

"The Manual of Orchidaceous Plants," comprising those cultivated under glass in Great Britain, has just reached us. It is published by James Veitch & Son, and is completed in the tenth part, containing a general review of the Orchidææ. This valuable work will be the subject of a review in a later issue.

A meeting was recently held at the house of Mrs. J. P. Lundy, in Philadelphia, to discuss the question of public playgrounds for the children of that city, and a committee was appointed to confer with the Board of Education with reference to using the yards connected with some of the public school-houses for playgrounds during the summer vacation.

A writer in *Meehans' Monthly* observes that nature makes provision for getting rid of the bark of trees by means of cork formations which rift the bark as the trunk increases. As it is the intention of nature, therefore, to remove the old bark it seems no injury to the tree, but rather a help to aid the plant in this direction. Washes of soap-suds or lye-water, or even scraping the trunks of trees, has been found of advantage. Lime-wash is often used, but the objection to it is its white and glaring color. It is, however, the cheapest and best way to treat the bark of fruit-trees.

The profuse flowering of the many Dogwood-trees in Prospect Park, Brooklyn, has been a local event each spring for some years past, and this year's display is now attracting many visitors. The borders of all the neighboring woodlands are also beautified by the blossoms of *Cornus florida*, and the Black Haw, *Viburnum prunifolium*, is flowering in every road-side thicket. It is a good thing to repeat what we have often said, that no flora in the world has more beautiful deciduous trees than our different *Viburnums*, Dogwoods, Hawthorns and Sumachs.

New tamarinds from the West Indies are offered in the fancy-fruit stores, and hot-house peaches from Connecticut may be had at seventy-five cents to a dollar each. The first water-melons from Florida last week sold here for two dollars apiece; these were more fully ripened than a small lot of muskmelons which came on the same steamer. Large shipments of strawberries from North Carolina and Norfolk have made low prices for this fruit; choice berries from the lower part of Delaware are in the markets now, and command at retail from twenty-five to fifty cents for a quart box.

The New Jersey forestry bill, whose provisions we briefly explained in the issue of March 28th, has since become a law. On Saturday a meeting to celebrate the passage of the bill was held at Bankmere, the home of Mrs. John C. S. Davis, Riverton, New Jersey, and the New Jersey Forestry Association was regularly organized. The constitution and by-laws of the Pennsylvania Forestry Association were adopted. Mr. Edward Burrough was elected President, and Mr. D. H. Wright, Secretary, and an executive committee was appointed, composed of twelve members of the new association.

Mr. B. E. Fernow, Chief of the Division of Forestry of the Department of Agriculture, is delivering a course of lectures to about fifty members of the senior class of the Agricultural College at Amherst, Massachusetts. The subjects treated in the twelve lectures are "Timber Physics," "Silviculture," including "Artificial Afforestation" and "Natural Regeneration"; "Forest-protection" and "Forest-exploitation," "Forest-survey," "Forest-regulation" and "Forest-finance," "What is Forestry?" "How Trees Grow," "How Forests Grow," "Accretion and its Measurement," "The Battle of the Forest" and "Forestry Problems in the United States."

At a recent display of the Royal Society in London the Messrs. Veitch exhibited a flowering plant of the Korean *Rhododendron Schlippenbachii*, a handsome plant with pale, rosy lilac, funnel-shaped flowers, the upper lobes of the corolla marked with dark spots near the base. *Rhododendron Schlippenbachii* is quite new to western gardens, although, in common with many Korean plants, it is a favorite in those of the Mikado's empire, where it was found by Mr. J. H. Veitch

during his visit to Japan two years ago. This species, which may be expected to prove hardy in the eastern United States, has not, so far as we know, flowered in this country.

Messrs. Barnard & Densmores, of Los Angeles, California, who send to this market crystallized figs, to which we alluded a few weeks ago, write us that they began to buy figs some ten years ago when there was but one bearing orchard within shipping distance. There are now several thousand acres in good bearing, but some of the varieties cannot be treated by their process for preserving, the details of which, we believe, have never been given to the public. A Fig-tree bears a crop the second year, and a good paying crop the third year. Messrs. Barnard & Densmores have paid one grower at the rate of \$500 an acre for figs from trees which were less than ten years old.

Along the palisades of the Hudson River, near this city, patches of *Viola cucullata* are showing luxuriant flowers in shades of lavender and purple, while the downy yellow violets of *V. pubescens* and the fragrant white flowers of *V. Canadensis* are scarce enough to make their discovery a rare pleasure. The flowers of *Claytonia Virginica* are, perhaps, most abundant of all, although the pink-purple cranesbills, *Geranium maculatum*, are only less common than the spring beauties. The trim little wind-flower, *Anemone nemorosa*, is seen singly on occasional plants, and clusters of rue anemone, *A. thalactroides*, are quite common among the spreading roots of the forest-trees. On jutting ledges of gray rock, fifty feet and more below the crest of the precipice, gay masses of columbines and feathery clusters of the White Baneberry revel in their secure positions.

In a late number of the *Rural New Yorker* there is a figure of a pod of the White Zulu Pole Bean, which was introduced by Mr. Burpee. Last year the vine, as grown on Mr. Carman's grounds, was eight feet tall on the first of August, the seed having been planted on the first of May. The pods, then averaging six inches in length, were often irregular in shape and unevenly filled. The pods were of an ivory whiteness, varying in width from half an inch to an inch, and were very solid and fleshy; the seeds at this stage of maturity were purple, kidney-shaped and about an inch long. The vine remained healthy through August, bearing beans in all stages of growth. When matured, these were purplish black. The quality was rich and excellent and the pod stringless. In a better soil and in a more favorable season it is probable that the beans would grow considerably larger than they did last year, and be more uniform in shape.

Seedlings of *Impatiens auricoma*, sent to Kew this spring, are now flowering freely there, though the plants are barely six inches high. This distinct little tropical Balsam was introduced into France last year from the Comoro Islands, and distributed by Monsieur Godefroy-Lebeuf, of Argenteuil. It is said to grow to a height of two feet and to bloom all the year round, and it grew well in the open air last summer in France. *I. auricoma* probably has the same habit and constitution as *I. Sultani*, but is not likely to become as popular, the flowers being deep yellow, about an inch long and nearly an inch across. A figure of it is soon to be published in the *Botanical Magazine*. *I. Sultani* when introduced from Zanzibar to Kew, some ten years ago, had rich rose-red flowers, but has since sported into varieties with pink, salmon, crimson and almost purple-colored flowers. A mass of these many-colored blossoms now makes a beautiful picture in one of the tropical houses at Kew.

A correspondent writes us from the Netherlands of the immense bulbous-plant farms with which Haarlem is encircled, and describes the narrow beds of many-colored hyacinths which extend one after another as far as the eye can reach, "like one of those delicately striped gauze scarfs our grandfathers used to bring from the east, flung out over the land. The tulip season is even more famous than that of the hyacinth, and tulip-time is dazzling with scarlet and gold; but the earlier blossoms are both more delicate in hue and more fragrant. Their sweetness would be overpowering under a less wide and open canopy of sky. It hurts one's feelings, however, to see the flaunting advertisements of rival growers suspended or erected upon every side. Yet, from the practical point of view, the bulb farms are satisfactory, too. Their exquisite neatness is notorious, and the stiffness of arrangement, which might be wearisome elsewhere, is here exactly in place. Nor is the Dutch gardener without his dream of evolving something strange and new, and as you listen to his theories you too become converted to his belief that the absence of novelties this spring will be abundantly compensated for next year."

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Care of the National Forests.

A BILL which has received general support from several influential quarters is now before Congress for the conversion of the Washington Forest-reservation into a national park. What special advantage may be expected from the conversion of this great forest-reserve, which embraces within its boundaries Mount Ranier, perhaps the noblest of the North American mountains, into a national park, we confess, is not very apparent to us. If the public have rights and opportunities in a national park which are denied to them in a forest-reservation; if roads are to be built; if any part of the forest is to be cleared up and additional facilities for camping are to be afforded under this bill, we hope that it will not be enacted at this time. Such a bill ought not to pass, for the same reason that any bill looking to a change in the boundaries of the Yellowstone National Park ought not to be favorably considered at present.

No one now has sufficient knowledge of the conditions that should govern the management of the parks and forest-reservations established by the Government in the west to speak of their future requirements with precision or authority. Millions of acres of forest-land have been withdrawn from sale and entry in the different states, but the Government has so far failed to take the necessary steps for formulating and putting into execution any plan for the care and management of these great possessions. These reservations have been made in bulk, so to speak, their actual boundaries in many cases being still unknown; they are practically unprotected against the inroads of campers, sheep-tenders and lumbermen, who are still able to prey upon these national reservations with comparative immunity from detection and punishment. In many cases it is safe to say that land has been included in the reservations and parks which could more advantageously be turned over to settlement, while in others an enlargement of boundaries might accomplish important results in the direction for which the reservations are primarily important. With all the ignorance and uncertainty in which this great question is involved, special legislation for any particular piece of Government property, we believe, would

be unwise. What Congress and the President require is knowledge upon which to formulate legislation, not only knowledge of the best boundaries for each reservation, but information upon the requirements of the inhabitants of the different regions in which the reservations are situated.

A great forest-reserve, covering, perhaps, thousands of square miles, cannot be maintained in the midst of the scattered population of the far west unless its value is made apparent to the people who live near it; and their approval cannot be secured unless facilities are given under proper restrictions for obtaining timber and other forest-supplies from the Government land and for reasonable hunting and other privileges. What, then, is needed is information about the best boundaries of each reservation, upon the actual condition of their forests and water-courses and upon the needs of the people who live upon their borders, that a sensible, common-sense scheme of forest-policy may be devised.

As we have more than once suggested, information of this character can only be obtained by experts empowered to investigate the whole question of the national forests, and to devise a scheme by which it will be possible to make the reservations something more than reservations on paper. Until Congress has such a report before it no legislation should be attempted beyond such as may be absolutely necessary to enable the Secretary of the Interior or the Secretary of War to provide a sufficient military patrol for the protection of the national property against wholesale destruction. The establishment of the reservations was certainly a step in the right direction, at which every one interested in the best development of the United States had good reason to rejoice; but unless this first and easy step is to be followed by the adoption of a well-considered national policy, it had better never have been taken, for the destruction of an unprotected forest-reservation is not less certain than that the axe and fire and browsing animals will in time convert the best forest into a desert wilderness, while an unprotected Government forest, offering as it does every inducement to robbery and deceit, is a sure source of public demoralization.

In the settlement of this forest-question is the opportunity for the display of broad and enlightened statesmanship; there is no place in it for local jealousies or for the gratification of selfish or sordid ambitions. Its settlement will mean the stability and permanent prosperity of an important section of the country, and, what is of even greater importance, it will mean that the people of the United States have attained to that degree of intelligence and long-sightedness which indicate a high condition of civilization. For, certainly, the intelligent care of forests in this age is one of the best evidences of civilization, and it is a fact that the true lovers of trees and the wisest managers of forests are found among the people who stand among the nations as the recognized leaders in every intellectual and moral movement.

Stephen Elliott.

THE name of Stephen Elliott will be remembered by botanists as long as the flora of North America continues to occupy their attention, for he was the author of a work on the plants of an interesting region, based upon a knowledge of their structure, habits, characteristics and properties, obtained by studying them as he found them growing in their native wilds, and not exclusively by an examination of the dried and unsatisfactory material preserved in herbaria, upon which the knowledge found in many works of botany is from necessity or otherwise obtained.

Stephen Elliott, who was born in Beaufort, South Carolina, November 11th, 1771, was a direct descendant in the sixth generation of William Elliott, a leading merchant of Charleston, where he arrived from England in 1670, and where his name is still preserved in Elliott Street; he was a great-grandson of John Barnville on the maternal side.

He was graduated from Yale College at the age of twenty, and studied medicine, although he never practiced the profession. In 1793 Mr. Elliott was elected a member of the Legislature of South Carolina, and continued to represent his district until 1812, when he was chosen president of the new State Bank of South Carolina, a position which he filled until his death. Literary and scientific studies, however, occupied much of his time and attention. In 1813 he took an active part in establishing the Literary and Philosophical Society of South Carolina, of which he was the president. He was a constant contributor, and, probably, the real editor of the *Southern Review*, one of those short-lived periodicals whose quality is often superior to their financial strength or the appreciation of the public.

On the organization, in 1825, of the Medical College of South Carolina, Mr. Elliott was appointed professor of natural history and botany, and delivered lectures on these subjects from his chair in that institution without other recompense than the gratification of his desire to make his knowledge useful. He married Esther Habersham, of Savannah, and owned a plantation on the Ogeechee River; so that during his frequent journeys to Savannah, Charleston and Vallambrosa, the name of his Ogeechee place, Mr. Elliott had abundant opportunities to observe the vegetation of the coast-region, and to acquire an accurate knowledge of the coast-plants, which formed the basis of his *Sketch of the Botany of South Carolina and Georgia*, as the classical work is entitled, upon which now rests his reputation as a man of science.

The first volume of this book bears on the title-page the date of 1821, and the second the date of 1824. It was, however, published in parts, and Dr. Asa Gray was able to assure himself (*Am. Jour. Sci.*, ser. 3, xiii., 1877) that the first part was published as early as September 26th, 1816, and that the beginning of the second volume was issued in 1821. This work, which contains accurate descriptions in Latin and English of all plants of his region known to the author, is enriched by many observations upon the medical properties furnished by Dr. Thomas MacBride.

Mr. Elliott's herbarium is preserved in the Charleston Museum; the manuscript of his book and of several of his unpublished works, including one on shells, are owned by his granddaughter, Miss S. B. Elliott, of Sewanee, Tennessee.

Stephen Elliott died in Charleston on the 28th of March, 1830. His body lies in St. Paul's Cemetery in that city, in an unmarked and now unknown grave. His features were long preserved in the Charleston Museum in a bust which, unfortunately, was ruined by the earthquake which visited that city in 1886; and the only portrait of him which is now known to exist is a small engraving made in Philadelphia to decorate the notes of the South Carolina Bank, and now the property of his grandson, Arthur B. Elliott, of Savannah, to whom we are indebted for the opportunity to have this engraving enlarged for the illustration which is published on page 204 of this issue.

The name of Stephen Elliott is preserved, too, in a genus of plants of the Heath family, of his discovery, established by Dr. Muhlenberg (see p. 206). It consists of three shrubs; the first of these is one of the rarest of North American plants; the others are common in the forests of northern Japan.

Abbazia.

WHY the professional tourist has so long neglected the Adriatic for the Mediterranean, who can say? That times are changing in this respect is evident. Baedeker is about to rise like a fiery planet over Adria, and an innumerable multitude will soon be disporting itself along the beautiful Dalmatian and east Italian coasts. Then we who came before them all will begin to plume ourselves greatly upon our priority, regretting only, in our hearts, that even we never saw the busy port of Fiume before it had electric light and asphalt paving, handsome moles and

warehouses, a grand hotel and a Hungarian grain-elevator of a wondrous pattern, and when the picturesque old waterside streets were made impassable by a high wind from the sea. As for Abbazia, nestling under the shelter of the Istrian mountains across the bay, it must have been infinitely lovelier before it was definitively discovered in this very spring of 1894 by the German Emperor and his numerous progeny. A really unnecessary proportion of the bright little place seems to have been reserved for their exclusive use, and they certainly take a great deal of guarding. A policeman or a soldier meets you at every turn, and if you linger too long in admiration of the bold coast-line, the sapphire sea, the quaint old villages on the hill-tops or the pleasant villas at their base, you will be politely requested to move on. And if you have ventured a step further, and tried to make a humble sketch of some particularly striking point, you will very likely discover that a detective has been told off to watch your further movements.

Such are the thorns concealed under the early roses of Abbazia, but, in spite of them, it remains delightful. Above all the eye revels in the wealth of greenery. The Istrian hill-sides in their natural state are almost devoid of vegetation; but plant what you will, and it seems to strike root and flourish bravely. The villa-gardens teem with intermingled vegetation from the north temperate zone and from the full tropics, and the little public park is a bewildering study in landscape-gardening. Of course, the Empress and the seven princelings have ousted the rest of the world from most of that choicest strip which skirts the shore, but one may still wander along the verdant hill-side at will, or even, at one point, follow a stretch of Daisy-studded turf that might have come from an English park, till a hedge of American Agaves shuts off the deep blue sea, with a Prussian man-of-war in the foreground, and beyond the hazy violet outlines of the gulf islands and the distant mainland. Turning back to the park once more, you see that the place derives a distinctive character for the moment from being all in green. Beds dot the turf indeed, round and oval and square, but they are filled, not with Geraniums and Azaleas, such as decorate the grounds of the neighboring villas, not even with bright Coleus, but with close-cropped mats of Dusty Miller and English Ivy, or with plummy, moss-green, southern Grasses. The Laurestinus and Lilac hedges must have bloomed last month; the hedge of Yew (*Taxus baccata*) will in time display its berries. Flowers are in store for us, too, on the dark-leaved Oleanders, and the last gay petal of a pink Horse-chestnut flutters down upon my hand from a point so high in air that I had not noticed it at all. Oh, avenues of the woods of Boulogne and La Cambre, you would shrivel with envy could you but see the height and vigor of that tree!

A little further on I hail with affection a Mexican Yucca, which goes here by the name of Graugrünliche Palmlilie. The east coast of the Adriatic is emphatically polyglot. German being the official tongue, we find the labels affixed to the plants in the park all printed in that language, but it is all Greek to the gardeners, who must be accosted in Italian. Rules and regulations intended for the people are formulated in Croatian, which does not appeal directly to the American intelligence. Zabrane ulaz one discovers, after a few lessons in the hard school of experience, means no admittance; but the significance of other warnings I have not yet learned.

It is the Yucca, by the way, which first leads us to notice that the park is peculiarly rich in American trees and shrubs, and that they have taken most kindly to their transatlantic home. The Tulip-tree and our big evergreen Magnolia are growing side by side, and the finest Sequoia gigantea I have ever seen in the Old World stands on its round of turf, stately and alone. A specially friendly gardener told me the ground had been cleared and the path laid out around it on purpose to show up its perfections when they found how well it was doing, and he bade me observe a

Cedar of Lebanon, which looked like a dwarf beside our soaring Conifer, though the trees, he assured me, were set out at the same time and were then of the same size. I wish I could feel a more implicit confidence in that gardener! He was waving in his hand as he talked a huge branch of Wistaria, intended for the decoration of the imperial apartments, and I asked him what they called it hereabout. "Glycine Chinensis," said he. "But I mean its common every-day name," said I. "Signora," he replied, with solemnity, "it has no common name; it is no common plant. In China, over the sumptuous palace of the Emperor grows the great original vine, and we of Abbazia"—here he clapped his manly breast—"we possess the solitary cutting ever made from that parent stem." 'Tis a pretty story; and so is the noble progeny a pretty sight, enwreathing, as it does, the gardener's tool-house, and intertwined with masses of yellow Banksia Roses. The luxuriance of the vine I have never seen excelled, not even by the one which drapes the walls and overarches the tables of a beer-garden close to the Cathedral in Florence. But luxuriance is the note of Abbazia's public park, from our first look to our last, which falls on a Deodar Cedar, rising above a mass of Oregon Grape (*Berberis Aquifolium*). All is lush and sheltered. One does not wonder, though one may not entirely rejoice, that the Emperor William has announced his intention of returning to Abbazia next spring.

Fiume, Austria.

Louise Dodge.

Agricultural Changes in Central New York.

THE lake country of central New York has been long renowned for its beauty and picturesque interest, and it is no less remarkable for its agriculture. The Wheatlands of Seneca County, comprising the table-land lying between Cayuga and Seneca lakes, was famous before the Genesee valley became noted for its wonderful fertility; and these same farms are now as capable of producing wheat as they were a generation and more ago. But the agriculture of the beautiful hill-sides bordering the lakes is undergoing a gradual, but radical, change. The products of these farms cannot compete with western grain and western beef, and pleasure-seekers and nature-lovers are annually seeking the lake region in greater numbers. All this demands a more specialized agriculture. The first sign of the change is an almost universal desire on the part of farmers on Cayuga Lake to sell their farms. Dissatisfied with present conditions, and aware that they are unable to take up a new and aggressive line of farming, the impulse is to sell the land to those who understand the new demands and who are confident that there is both profit and pleasure for the skilled cultivator in these farms. A widespread desire in any community to sell the land always indicates the downfall of old practices and the oncoming of the new.

Already the tide of the better agriculture has set in strongly. About Keuka and Seneca lakes, to the west, fruits and special industries have long since given a high and strong incentive to farming. This success is spreading eastward, and here and there little fruit-farms are being established along the shores of Lake Cayuga.

This season has been a memorable one with the nurserymen of this section. Despite the hard times, nursery-stock at Geneva and Rochester is sold out cleaner, perhaps, than in any spring for a decade or more, and this fact enforces what I have already said concerning the change in habits of farming. Many farmers who, a few years ago, would have scorned fruit-culture, are setting out berries and peaches, and some of them now act as jobbers of nursery-stock and supply the neighborhood. Even Raspberry-plants, which can usually be had in abundance, this year have not been obtained in sufficient quantity to supply the demand in the rural districts.

Aside from peaches, which were injured by the cold weather, the fruit prospects in central New York are unusually good. Apples, pears and plums especially have

given a heavy bloom, and the weather thus far has been propitious. Spraying is now practiced in almost every community. In short, farmers are beginning to look to their fruit-crop as one of the surest means of profit.

Ithaca, N. Y.

L. H. Bailey.

Botanical Notes from Texas.—XVIII.

DISTINCT and peculiar South American *Nicotiana glauca* has been introduced into the gardens of south-western Texas. It is a tall, slim, small tree, sometimes twenty feet high. The light sea-green color of its leaves and newer stems will lead to its easy recognition. The species runs wild with great facility. It is becoming common in unoccupied lots, along streets and near streams. Mexicans call it *Giganta*, and sometimes *Tro-nodora*. Americans call it *Giant*, or they will tell you that it is a *Eucalyptus*. In one town a man told me that a lady resident there had growing in her garden a genuine Palestine Mustard, whose rapid and large growth from a very small seed was used by the Saviour to illustrate the amount of faith that would be requisite to remove a mountain. On asking to see the plant I was shown *Giant*.

Extensively planted in gardens in south-western Texas is *Antigonon leptopus*, a very handsome tall-climbing member of the Buckwheat family. It makes a wonderful display of bright red flowers in the summer, and when at the height of its flowering it has no superior here in elegance and beauty. Its leaves are very like those of its remote relative, our eastern *Brunnichia*. It bears no other resemblance to *Brunnichia* except in being a climber. Mexicans call our plant *Coamscatl*. I have never met this species in a wild state. It may not be indigenous to Texas, but it seems to be so much at home here, and spreads so rapidly, that it will probably run wild.

Two rather handsome cousins of the Four o'Clock family, *Acleisanthes longiflora* and *A. Berlandieri*, grow abundantly throughout south-western Texas west of the ninety-eighth meridian. They are trailing plants, with white, or sometimes purplish, flowers, with very long tubes. The flower-tube of the first-named species is sometimes six inches long.

Cladathix lanuginera is one of the most conspicuous plants of this region. It sometimes lies prone, and sometimes it forms a mass of vegetation two feet tall and a yard across. Its range is much more extensive than it is usually credited with. I have seen it growing near Otterbourne, in Thomas County, Kansas, which is only a few miles south of the fortieth parallel.

Common almost everywhere in southern Texas is the semi-tropical *Tribulus maximus*, a rutaceous plant, prostrate and very hairy, bearing rather handsome flowers, which are succeeded by bur-like fruits, as its generic name signifies. Plants bearing burs being older than the ancient instrument of war, *tribulus*, used to impede the progress of cavalry, it, too, may be supposed to have derived its name, and perhaps its form, from a bur. Our species extends northward in central Kansas to the Saline River, or to the thirty-ninth parallel.

Near San Diego I found, also, a handsome little *Aristolochia*, *Nyctaginea capitata*, one or two species of climbing *Serjania*, *Guaiacum angustifolium*, and other old and new plant acquaintances, whose presence there made my short visit to the city pleasant to remember.

Kansas City, Kansas.

E. N. Plank.

Foreign Correspondence.

Notes on Orchids.

VEITCH'S ORCHID MANUAL.—The tenth and last part of this most valuable work has just been issued. It contains a general review of the Orchideæ, including chapters on the Morphology, Fertilization, Hybridization, Geographical Distribution, with maps, Classification, a Retrospect of Orchid Culture, Orchid Amateurs of the Past, and the Literature (bibliography) of Orchideæ. Those who have followed the growth of this work, who have studied its structure, the accuracy of its information—botanical as well as horticultural—and its general excellence as a whole, will, while admiring the scientific spirit which pervades it, the utter absence of anything like trade-considerations, regret that it has not gone further and exhausted the whole subject of garden Orchids. No doubt, the immense labor attending its preparation has been a severe tax upon the resources, even of the princely house of Messrs. J. Veitch & Sons. The small genera which have been omitted are not, as a rule, of first-rate importance. What was needed,

a scientific monograph of the most important genera of garden Orchids, has been provided by Messrs. Veitch, and we are deeply indebted to them for it. Not even at Kew would it have been possible to produce such a work as this that has emanated from the great Chelsea Nursery; indeed, one may say that the only establishment where such an undertaking could be successfully worked out was that of the nursery firm which, for nearly a century, has done so much to further the interests of scientific horticulture, both by enterprise in collecting and cultivating for distribution all kinds of interesting plants, and especially Orchids.

COELOGYNE SWANIANA.—I mentioned this new Orchid last week and suggested that it might prove to be a form of *C. Massangeana*. I have since had an opportunity to compare the two, and perceive a marked difference between them, the pseudo-bulbs and leaves of *C. Swaniana* being shorter than those of *C. Massangeana*; the flowers, too, are smaller, the pendent scapes shorter, and there are other differences besides that of color. I consider *C. Swaniana* (named by Mr. Sander in compliment to Mr. Swan, A.R.A., the eminent animal painter) a beautiful addition to this section of cultivated *Cœlogyne*s.

It has lately been introduced by Messrs. F. Sander & Co., in whose nursery it is now represented by numerous plants in flower. Apparently it is as easy to manage as *C. Massangeana*. Of this latter Messrs. F. Sander & Co. have many specimens, some of which are now bearing numerous necklace-like scapes of flowers, in some cases a yard long.

LÆLIA PHOEBE is a hybrid of extraordinary beauty and distinctness. It was raised from *L. cinnabarina* and *Cattleya Mossiæ* by Messrs. F. Sander & Co., in whose nursery I recently saw it in flower. It has flowers five inches across, with segments as broad again as those of *L. cinnabarina* and a lip intermediate between that of the two parents, the color of the whole being a rich, glistening orange-buff, richer than the flesh of an apricot, with a feather-like crimson marking of the front lobe of the lip. This is a plant for which we are all ready to feel grateful to the hybridist.

PHAJUS GRANDIFOLIUS and its allies evidently are a great deal more variable than we have hitherto believed. In the St. Albans nursery at the present time there are hundreds of them in flower, so variable both in size and color that some botanists might easily find in them twenty or more good species, while others would lump them all under one species of a surprisingly varied character.

CYPRIPEDIUM ANNIE MEASURES.—This hybrid between *C. bellatulum* and *C. Dayanum* was shown in flower last week by Mr. R. J. Measures, and awarded a first-class certificate by the Royal Horticultural Society. As might be expected from the extremely diverse characters of its parents, it is a well-marked plant, and an improvement upon *C. bellatulum* in habit and flower-color; it has prettily marbled leaves six inches long, and flowers four inches across on stalks six inches high; the petals are an inch broad, white, thickly spotted with purple; the broad, concave dorsal sepal is yellow, margined with white and lined with purple, and the narrow, compressed lip is colored purple, paler toward the point.

BULBOPHYLLUM SAUROCEPHALUM, which was shown last week by Mr. J. O'Brien, and obtained an award of merit, is an interesting species from the Philippines, remarkable for

its curved flower-scape, the upper half of which is purple and thickened like a club, with the small purple and yellow flowers springing from little pits.

CYPRIPEDIUM NIVEUM is one of the most delightful of all *Cypripedium*s when it is happy and in full flower, its elegant white flowers, sometimes speckled all over with tiny purple dots, being without equal in the genus. But it is a bad plant to manage in most collections, being more liable to the dreaded Orchid disease known as spot than any of its congeners. I am told by a friend who has seen it growing wild in the islands off the Malay Peninsula that it is always found growing on the face of limestone rocks not far from the sea, its roots nestling among the débris formed in little depressions in the rock, and its leaves exposed to full sunshine. It gets completely dried up for a portion of the year, but when the wet season returns it soon recovers and flowers profusely. No doubt, we fail with this plant through growing it in the ordinary peat mixture in a moist, shaded house, and keeping it watered all the year round.

CATTLEYA SCHROEDERÆ was described as a variety of *C. Trianæ* by Reichenbach in 1887, when it was first introduced, and as *C. Trianæ* it has been reduced to a variety of *C. labiata*. The correct name is now *C. labiata*, var. *Schroederæ*. Some writers have confused this plant with *C. Schroederiana* of Reichenbach, now reduced to a variety of *C. Walkeriana*, and, of course, a very different plant from that under notice. At this time *C. Schroederæ* is one of the most charming Orchids in flower, its soft and pleasing colors, variety of tints (there are a dozen or more named varieties now) and delicious, powerful fragrance being exceptionally welcome in the Orchid-house. Mr. Rolfe agrees with me that, except in these characters of fragrance and shade of color, *C. Schroederæ* does not differ from what is generally known as *C. Trianæ*. It is a native of New Grenada, and is now sufficiently common to be easily obtainable.

SPATHOGLOTTIS KIMBALLIANA AND S. AUREA.—I followed Reichenbach, Veitch and Sir Joseph Hooker in looking upon these two plants as being, to all intents and pur-

poses, identical, but, as a matter of fact, they are quite distinct, and while both are beautiful, the premier place among cultivated species of *Spathoglottis* must be awarded to *S. Kimballiana*. It has flowers fully three inches across, the segments thicker than in *S. aurea*, and the three outer segments (sepals) colored reddish brown at the back; in *S. aurea* the flower is uniformly yellow. Then there is a difference in the form of the labellum, the claw of which is broader in *S. Kimballiana*, and there is also a difference in the crest, which is hairy in *S. aurea*, glabrous in *S. Kimballiana*. Both species grow together, I believe, but they are not difficult to separate even when not in flower, *S. Kimballiana* having broader and thicker leaves than *S. aurea*.

DISA HYBRIDS.—The raising of Orchids of various kinds from seeds is now proceeding at a great rate in this country, compared with what was done in this direction a few years ago. At present few Orchid-seeds are sown, except those obtained from crosses; but I anticipate that when once the method of procedure becomes better known, this means of propagating Orchids will become general. In the principal Orchid nurseries in England there are now hundreds of thousands of young seedling Orchids of many kinds, and it is easy to comprehend the interest, and even

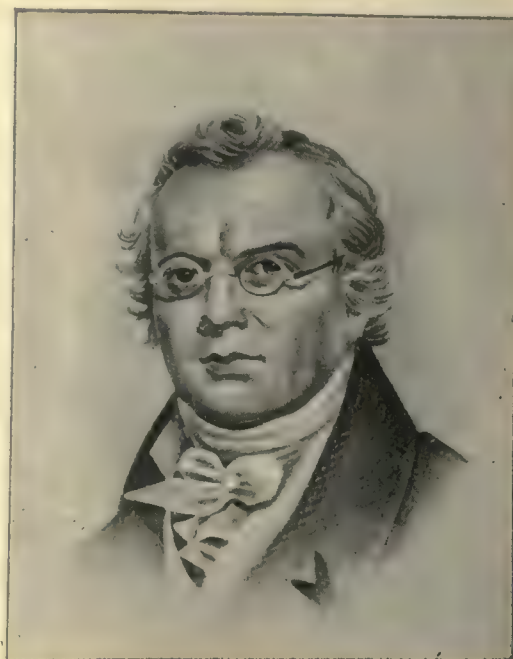


Fig. 36.—Stephen Elliott.—See page 201.

Fig. 37.—*Elliottia racemosa*.—See page 206.

1. A flowering branch, natural size. 2. Vertical section of a flower, enlarged. 3. A flower, the corolla and stamens removed, enlarged.
4. A stamen, front, side and rear views, enlarged. 5. A cross-section of an ovary, enlarged.

excitement, with which the development of these is watched. At Kew we are now watching with interest the rapid approach to blossoming of a large batch of *Disas* raised from seeds obtained by crossing *D. grandiflora*, *D. racemosa*, *D. tripetaloides* and the hybrid *D. Veitchii* with

each other. Two of these crosses flowered last year and were named *D. Premier* and *D. Kewensis*, both good and handsome plants. Probably a hundred more will flower here before midsummer.

London.

W. Watson.

New or Little-known Plants.

Elliottia racemosa.

ELLIOTTIA, a genus closely related to *Rhododendron* and *Ledum*, is composed, as it is now usually understood, of three species placed in three rather distinct sections distinguished by the character of the calyx-lobes and the bracts of the inflorescence, and by the number of the petals and stamens.

The type of the genus, *Elliottia racemosa*, of which a figure, the first which has been published, appears on page 205, is a shrub four to ten feet high, with slender, virgate, spreading branches covered with smooth, light brown bark. The leaves are alternate, oblong, acute at both ends, tipped with slender, glandular mucros, and entire; they are thin and membranaceous, conspicuously reticulate-venulose, dark green on the upper surface, pale and covered with scattered hairs on the lower surface, especially along the slender midribs, three to four inches long and an inch to an inch and a half wide, with obscure veins and slender grooved, hairy petioles, abruptly enlarged at the base and about an inch in length. The flowers, which appear in early spring, are produced in terminal racemes, or racemose panicles, six to ten inches in length, and are borne on slender pedicels two-thirds of an inch long and furnished near the middle with two minute acute scarious bractlets. The calyx, which is cup-shaped, is green, and divided to the middle into four rounded apiculate lobes, scarious and ciliate on the margins. The corolla is composed of four thin white strap-shaped slightly obovate petals rounded at the apex, half an inch long, an eighth of an inch broad, and slightly united at the very base; they are imbricated in the bud, which is oblong-obovate, and after anthesis are spreading and recurved. There are eight introrse stamens which are inserted under the margin of the thick pulvinate disk, and are about half as long as the corolla; they are composed of broad flat filaments and of sagittate erect anthers, which are attached on the back and below the middle, and are two-celled with callous-tipped cells opening longitudinally from the apex to below the middle. The ovary is sessile, subglobose, four-lobed and four-celled, and is abruptly contracted into an elongated slender declinate style enlarged at the apex into a stout incurved capitate stigma. The ovules, of which there are about six in each cell, are inserted on a thick two-lobed placenta attached to the inner angle of the cell and are flat and nearly orbicular. The fruit is unknown.

Elliottia racemosa grows in wet sandy woods and was discovered early in the century at Waynesboro', on the Savannah River, in Georgia, by Stephen Elliott. Later it was found near Augusta, Georgia, and also near Hamburg, on the South Carolina shore of the river. Of the station near Augusta, in Columbia County, the only place where *Elliottia racemosa* has been seen growing wild for many years, Mr. P. J. Berckmans, of Augusta, writes that "it is now entirely barren of *Elliottia*, the land having been cleared. Unless another locality is found, I should not be surprised if the species is now preserved only in my grounds. We succeeded in propagating a few plants from root-cuttings. The plants were kept in cold frames in winter and started nicely in the spring of 1889, but every one failed after they were planted in the open ground. I have tried root-cuttings from both hard and soft wood and root-grafts, but have only succeeded with root-cuttings. Several years ago I gave Dr. Thurber several plants taken from the woods; these have been possibly kept alive; if so, my plants are not the sole visible representatives of the species."

It is not improbable that sooner or later this beautiful shrub will be found growing in other localities in the valley of the Savannah River, or that it will in time become multiplied in gardens, where it should prove a most desirable addition to plants of its class. If, however, it is destined to disappear, the generic type and the name of the botanist it commemorates will be preserved in the two

Asiatic species, which are both common inhabitants of the forests of southern Yezo and of the mountain-regions of northern and central Hondo; they will soon be seen in American gardens, although neither of them, unfortunately, equals the American species in the size and beauty of their flowers.

C. S. S.

Cultural Department.

Notes on Trees and Shrubs.

SOME of the species of American Wild Plums have this season flowered in great profusion, and have been much admired by visitors to the Arboretum. It is not often that these trees are planted for the beauty of the blossom alone, but the almost regular annual abundance of the snowy white bloom of such species as *Prunus nigra* and *P. Americana* makes them very desirable shrubs or small trees for effective planting in parks or large shrubberies. A plant or two is well deserving a place in any large garden, or they may be set along a fence, where a screen is desired, and prove quite as interesting and beautiful as the ordinary Lilacs which are usually allotted similar situations. Moreover, they may also be turned to useful account, for the fruit of some of these plants will be found quite palatable and available for culinary purposes. A number of garden varieties have been named by horticulturists, and much attention is now given to their improvement.

The two species mentioned have long been considered as one, under the name of *Prunus Americana*, and we find them still so classified in the last (1890) edition of *Gray's Manual of Botany*. They have, however, been divided and separately figured and described in Professor Sargent's *Silva of North America*. In the Arnold Arboretum *P. nigra* is usually distinguished by its first flowers opening about a week earlier than those of *P. Americana* in the same situation. The date of first flowering this year was April 27th. In 1893 it was May 11th; in 1892, May 3d, and in 1891, April 27th, these records being made from the same individual plants. These observations seem to show that near the end of April the season was as far advanced in 1891 as it was this year, which is generally considered unusually early.

The flowers of *P. nigra* are larger than those of *P. Americana*, but the plant is better characterized by its more stiff or rigid growth, thicker branchlets and spines, and by its larger, broader and more bluntly serrated leaves. The fruit of *P. nigra* is usually an inch or more in length and oblong-oval in shape, while that of *P. Americana* is more commonly globose than elongated. *P. Americana* also becomes a larger tree than *P. nigra*, and it has much more slender and wider-spreading, twiggy branches, the outer ends of which droop more or less, so that some plants appear almost pendulous in habit. Plants of *P. Americana* just twenty years old from seed are now eighteen or twenty feet high, and have branches spreading over about as great a diameter. These seeds came from Ohio, and the range of the species is western and south-western, while *P. nigra* appears to be the Wild Plum of the north and north-west. The fruit of *P. nigra* is usually yellowish red or red in color, while that of *P. Americana* is usually dark red, sometimes inclining to purplish, and is often sprinkled with numerous minute whitish dots and covered with a whitish or purplish bloom.

The fruits and other characters of both species vary much in different individuals; but as seen in the Arnold Arboretum, however, the constant differences between the plants raised from Vermont and from Ohio seeds are quite as marked as are to be found between Black and Scarlet Oaks, or White and Red Ashes. For ornamental planting the long drooping-branched *P. Americana* is to be preferred, as it also appears to be more floriferous, although both species bear a great profusion of flowers.

Prunus Allegheniensis, which was figured in the third volume of *GARDEN AND FOREST*, p. 429, blossoms about the same date as *P. Americana*, and in some respects it appears like a dwarfed form of it. Where a smaller plant than *P. Americana* is desired *P. Allegheniensis* would be a good one to use, although it does not appear to blossom as freely. Its leaves and flowers resemble those of *P. Americana*, but are smaller, and as the flowers fade away they change to a deep pinkish color. As grown in the Arboretum, from plants collected in Pennsylvania, the fruit is small, round, with a heavy bloom, which gives it a bluish color, and when fully mature it is of a pleasant, though slightly bitter, acid flavor. All of these Plums are very hardy, and they seem less liable to be affected by black-knot than most of the imported species and varieties. Any

particularly desirable form or variation may be readily propagated by root-cuttings. Whenever the roots of these Plums are bruised or exposed, suckers are usually produced. It is generally considered, however, that propagation by root-cuttings or suckers tends to increase the suckering habit, and, while all plants procured in this way may be relied upon as being sure to reproduce the peculiar characteristics of the parent tree, grafting on seedling stock would be more satisfactory where a single individual is desired with less tendency to sucker.

As the flowers of *Prunus Americana* and *P. Allegheniensis* begin to fall away, those of our native Beech Plum, *P. maritima*, open, and they are the latest blossoms found on any of the hardy Plums. A few first flowers were open on May 9th, this season, and about May 22d on the same plant last year. Three or four days after the first flowers open, the plant is in its best and fullest bloom. The flowers are produced abundantly, closely set along the rather stiff branches. They are not quite as pure a white as those of the other native Plums. As it grows near the seashore beaches, it is usually a low, straggling, stout shrub, but under cultivation and given plenty of room for development, it may assume a handsome, symmetrical, small, tree-like form. Such a plant in the Arboretum, now eighteen years old, from seed, is more than ten feet high, and its branches cover a space about fourteen feet in diameter. The small, round fruit, while usually red or purplish, is not uncommonly distinctly yellowish in color, and on some plants and in different localities it may vary much in size and edible qualities.

Arnold Arboretum.

J. G. Jack.

Foliage-plants for Outdoor Bedding.

FOR a country of such large extent and so diverse climate as ours it is not possible to lay down positive directions for outdoor bedding or to give exact lists of plants. In the middle Atlantic states, at least as far north as New York City, the best time for planting out is the latter half of May; the ground is then usually warm, and tender-rooted species are not seriously checked by the change.

Foliage-plants are generally improved by being turned out of their pots when they are set out-of-doors. Others, again, will do equally well with the pots plunged below the surface of the soil just deep enough to prevent their drying out. Variegated Yuccas, Agaves, Hechtias, and other plants of this character, do better left in pots all the summer, for when planted out they often make so many roots, and some of them also so many suckers, that it is difficult to get the plants into pots of reasonable size when they are lifted in the fall. If there is plenty of room in the hot-house to carry large plants through the winter, it is always preferable to turn the plants out of the pots for spring planting.

The beds should be thoroughly prepared and the soil well spaded and fertilized, for foliage-plants require richer soil than is needed for flowering plants. In the latitude of Philadelphia and southward, Crotons are among the most effective foliage-plants for summer bedding, although a few degrees farther north, as we learn from Mr. Orpet's recent notes, Crotons are not successfully grown out-of-doors. Even here it is necessary to harden them well before they are planted out, and if they are brought out of a close moist house and fully exposed at once the foliage is likely to bleach and fall off. If they are grown in a light, sunny house, and have good ventilation for a week or two before the time to transplant, Crotons will scarcely drop a leaf from the change, and the foliage will increase in brightness and beauty as the season advances.

The variegated Phormiums are also good outdoor foliage-plants, and their long sword-like leaves are very effective in mixed plantings. All the varieties are extremely tough, neither wind nor sun affecting them.

Among Palms there are few more hardy than *Rhapis flabelliformis* and *Chamærops excelsa*. The majority of pinnate-leaved species are quite easily injured, with the possible exception of *Areca Bauerii*. *Farugium grande* is an old inhabitant of our gardens; it is far from common, however, although a useful ornamental plant for the house in winter, as for bedding out in summer. Out-of-doors it does best in a partially shaded spot.

Ficus plants of the various sorts are highly useful for outdoor plantings. *F. elastica* and its variegated form, *F. Porteana*, *F. Chauvrii*, and, in a somewhat sheltered place, *F. Parcellii* may be used to advantage. *Aralias* and *Fatsias*, also, include several fine species which should be in any group of foliage-plants out-of-doors, and *Hibiscus Cooperii* and *Phyl-*

lanthus nivosus are even more brightly colored in the open than when grown under glass.

For edgings about foliage-beds of large size I do not know anything superior to the *Acalyphas*, while for smaller beds *Peristrophe angustifolia variegata* makes an effective border.

Holmesburg, Pa.

W. H. Taplin.

The Hardy Plant Border.

THE herbaceous border is interesting at all times. Sometimes, on account of association or rarity, one will see beauty in a modest plant which would be uninteresting to the casual observer. Lack of general effectiveness in the border is a frequent complaint, and this is probably largely due to the prevalent fashion of massing tender exotics during the summer-time for temporary effect. In many private gardens, from which the owners are absent during certain seasons, general effect can be equally well produced with perennials, and it would be well for those who intend to make borders the coming autumn to note as the season goes by such plants as appear of value to them.

In the majority of cases especial attention will be paid to the spring display, which lasts well into July. In making a collection it is best to begin with the commonest kinds, which are the cheapest and always satisfactory, since they are the easiest to take care of. A list of such should include the Tufted Pansies, in blue and yellow, the first flowers of spring and the last of autumn; the blue *Mertensia Virginica*, and Day Lilies in shades of yellow. Of these last, *Hemerocallis graminea* is sulphur-yellow and the earliest; *H. Mittendorffiana*, golden-yellow and medium early, and *H. Thunbergii*, pale yellow and later. *Ajuga Genevensis*, the Alpine Bugle, has deep blue flowers; *A. pyramidalis*, paler blue; *A. reptans alba*, white. The Speedwells, *Veronica gentianoides* and *V. amethystina*, are both blue. Of the Columbines, *Aquilegia Canadensis*, the earliest, has red flowers; *A. cœrulea*, the Rocky Mountain species, *A. glandulosa*, the large spurless species from Siberia, are blue; *A. Skinneri* is orange-red, and there are also many fine garden hybrids. *Iris verna*, *I. Sibirica hæmatophylla*, with fine foliage; *I. oxysepala*, with early dwarf, pale blue and sweet-scented flowers, besides a host of German Irises, in shades of yellow, blue, orange and purple, are all most desirable. It is here worthy of note that when planted with yellow and red flowered Ghent Azaleas these blue German Irises produce a striking effect. Trumpet Daffodils, Poet's Narcissus, *Delphinium formosum*, Canterbury Bells, Foxgloves, Sweet Williams, *Myosotis*, *Phlox Carolina* and *P. Stelleriana*, both lavender-blue; Siberian Squills and the Moss Pinks, *Phlox subulata*, on account of dwarf habit, effectively fill out spaces near the margin. Among Poppies are *Papaver orientale*, scarlet and orange; *P. nudicaule*, yellow, white and orange; *Uvularia grandiflora*, yellow. *Alyssum saxatile* and *A. Wiersbeckei*, the latter a fine yellow. *Spiræa palmata*, pink, and *Astilbe Japonica*, white. These are by no means all that are available, but they are among the cheapest and best, and enough to begin with. As the grower becomes acquainted with the plants he can add, from time to time, the newer or rarer kinds.

For a summer display Japanese Irises occupy first place. There is a wonderful richness of coloring among them. While doing well in an ordinary border, they are brought nearer perfection when so planted that during the flowering season abundance of water can be given them. Orange, red and yellow *Potentillas* make a brave show; so do *Pyrethrum roseum*, the single varieties being quite as handsome as the double ones. *Thermopsis Caroliniana*, with long spikes of yellow Pea-like flowers; *Gypsophila paniculata*, with open sprays of little white flowers, indispensable for cutting; *Coreopsis lanceolata*, a large-flowered clear yellow species; *Campanula Van Houttei* and *C. macrantha*, both with blue flowers, and *C. persicifolia*, white and blue, are among the handsomest of the Bell-flowers; *Scabiosa Caucasica*, with large lavender-blue flowers, a perennial Mourning Bride; *Baptisia australis*, with deep blue flowers; *Achillea Ægyptiaca*, a tall yellow Yarrow; Hollyhocks; the long-spurred yellow Columbine, *Aquilegia chrysantha*; *Gillenia stipulacea*, *Liatris scariosa*, *Pentstemon grandifolius* and *P. Cobæa*, two of the noblest and best; besides various species of *Lilium*, and many more could be used to make a fine display.

For effect in autumn the Sunflowers occupy a conspicuous place; *Funkia grandiflora*, the large white Plantain Lily; New England Asters, as well as *Aster turbinellus*, *A. ptarmicoides* and *A. amellus*; *Lobelia cardinalis*, *Inula glandulosa*, *Chelone Lyoni*, Japan Anemones, *Campanula grandiflora*, and especially the variety *Mariesii*, which is very dwarf; *Chrysanth-*

mum lactustre; Phloxes, especially those belonging to the decussata type, and Pyrethrum uliginosum are all desirable. I might add some of the best Tritonias, but as these are not perfectly hardy they would need storage in cellars to make sure of saving them.

Seeds of biennials, including Hollyhocks, Canterbury Bells, Foxgloves, Sweet Williams and Myosotis, as well as Pansies and Violas, may be sown any time between now and the end of June, and transplanted into nursery beds. Canterbury Bells and Foxgloves make excellent pot-plants, and used with Astilbe Japonica or Deutzia gracilis, are very effective for piazza decoration.

Wellesley, Mass.

T. D. Hatfield.

Notes on Irises.

IRIS LUPCIENS is the most interesting Iris of the week. This is one of Professor Forster's seedlings, which, as indicated by the name, is a cross between *I. lupina* and *I. Cien-gialti*. It is a plant of attractive habit, the leaves being a foot long, and the flowering stems rise to double this height. The flowers are of medium size and fine form, with large falls and somewhat larger standards. The edges of the standards and falls are slightly frilled. The coloring is a pleasing shade of heliotrope, with veinings of a darker shade of the same color permeating all the petals. There is no hint of red in this flower, and it is a distinct and valuable addition to the garden. Its flowering season seems to be intermediate between those of its parents. Professor Forster's ingenious nomenclature sometimes produces curious euphony, but is a practical and common-sense invention which is a welcome relief to the ordinary method of naming hybrid plants. These names are usually unmeaning and an extra burden on the memory of the cultivator who interests himself in the origin of his plants. The new nomenclature is simple and full of meaning.

Iris Redouteana, a variety of *I. lurida*, is a very dwarf, richly colored flower, which is quietly effective. The flower is small, with broad standards gracefully disposed, and the long narrow falls are lateral. The color is a rich claret-red.

Iris Florentina, with its large, nearly white, flowers, is one of the most charming plants of the season, and should be in every garden. It is a reliable garden variety, and its exquisitely colored flowers have a patrician air, notwithstanding this is one of the commonest of plants. It is also commercially valuable, and many tons of its roots are each year gathered, dried and prepared to make the orris-root of trade. The finer grades of this root are used by perfumers, usually to simulate violet. It is also largely used in tooth-powders and for sachets. Of late years oils, both liquid and concrete, have been extracted from the roots, and these have proved useful to the soap-maker as well as to the perfumer. This Iris is also the only officinal species, being sometimes used in medical practice as a cathartic, and in large doses as an emetic. It is one of the older remedies, however, and is seldom used now. Other species of Irises are also in flower now, but none are specially noticeable, except *I. cristata*, our little crested southern Iris, which, in beauty and distinctness, is second to no dwarf Iris, and is besides a valuable plant for a front border, where its flat, creeping shoots are now covered with its cheerful light-blue flowers.

Elizabeth, N. J.

J. N. Gerard.

Correspondence.

Fruit Prospects in Central New York.

To the Editor of GARDEN AND FOREST:

Sir,—The Apple-trees in this section have blossomed freely, and the prospect is excellent for a good crop. This is the year for an abundance of Northern Spies, Greenings and Spitzenbergs. Baldwins were not so free in blooming, but a good crop of Jonathans and Pippins of all sorts may be expected. For nearly all varieties of Pears there is a splendid outlook, excepting, possibly, Flemish Beauty. I observe that Anjou, Buffum, Rostiezer, Louise Bonne, Kieffer, Onondaga, Clairgeau, Tyson, Lawrence, Sheldon and Bartlett are all in promising condition. Plums, notwithstanding the enormous crop of last year, are again well set with fruit, as are also all kinds of Cherries. Grapes and Quinces blossoming on new wood are unfolding a wonderful bloom. A few varieties of Grapes were injured in the vine by the open winter.

Among small fruits, strawberries may be quite surely counted on to be abundant. Red Raspberries, for some reason, are killed back one-third, and the crop reduced accordingly. Black Raspberries are healthy and full of bloom.

Blackberries are only moderate in set of fruit. The weather is every way favorable to the pollinization of fruit, insects abundant, and no cold winds and rains.

Clinton, N. Y.

E. P. P.

The Beauty of Rural England.

To the Editor of GARDEN AND FOREST:

Sir,—The beauty of rural England, so famous in song and story, is due to a combination of causes in which a national love of purely artistic landscape beauty has played but a subordinate part. In art, and landscape-art is no exception, we seek for beauty of proportion, symmetry of form and harmony of color, and in the arrangement of masses of color it seems to me that the formal gardens of England do not reach that perfection of taste which one expects to find in an old country. Fortunately, it is almost impossible to mar the rich harmony produced by the intermingling of delicate pearly grays and soft greens which are everywhere in England the prevailing tints in the landscape, for wherever color is introduced to relieve the soft monotony, it too often strikes a discordant note.

The favorite border-plant last summer, both in public parks and private gardens, was *Ageratum*, and the contrast of the dull bluish purple of its feathery bloom with the vivid green of the grass was by no means grateful to the eye. Twenty years ago, Richard Grant White, commenting upon the dress of Englishwomen, spoke of their great fondness for shades of purple, and this fondness seems to have been passed on to the gardener of to-day. Besides the *Ageratum*, there were great borders and beds of dark purple *Heliotrope*, which is also too dull in color to give pleasure in masses. Within a little triangular grass-plot, under the very shadow of Westminster Abbey, where only grass was needed, little formal beds of *Ageratum* and dark *Heliotrope* were growing side by side. Another favorite border-plant was *Lobelia*, and the bright, hard, cold blue of its blossoms looked harder and colder against the vivid green of the grass. Geraniums were marvelously rich in color, but the scarlet and pink varieties, which, planted in separate beds, would have made oases of color in the vast expanse of green, were either intermingled or placed so near together that they seemed to stare each other out of countenance.

The use of flowers for table-decorations is universal, but nowhere was the best taste shown in their selection or arrangement. At Oxford, at an entertainment given at the annual meeting of the Royal British Nurses' Association, royalty was present in the person of the Princess Christian. The luncheon was served in the beautiful hall of Magdalene College, and on such an occasion one might surely expect a profusion of flowers, arranged with some attempt at grace; but the only ornaments on the tables prepared for the inferior guests were clumsy pots of an ordinary pink *Begonia*, placed at regular intervals, while on the table presided over by Princess Christian was a small epergne containing a handful of flowers in which, however, were the inevitable pink and scarlet Geraniums in close proximity. In the window-boxes the blending of bright colors was rather pleasing, as these always contrasted well with the rich gray of the stone cottages in the country, or with the dingy gray of the houses of the city. The flowers for sale, both in the streets of London and in the smaller cities, were inferior in quality to those offered on the streets of New York. Many of them, indeed, were so poor and straggling that they seemed fit only for an excuse to beg. These found a ready sale, even among the poor. In short, I drew the inference, though possibly on insufficient grounds, that with the English love of flowers is an instinct due primarily to the fact that these flowers are children of the soil, "the little sisters of the fields," to use St. Francis' phrase, and dear to every Englishman and woman from the thousand associations of home and childhood. It is a human affection, and, therefore, one to command respect, but it is not æsthetic, and for this reason, perhaps, the English seemed less particular than Americans are that the flowers they love should possess grace of form, fineness of texture and delicacy of color.

Orange, N. J.

A. McC. Hallock.

Recent Publications.

L'Horticulture Française, ses Progrès et ses Conquêtes depuis 1789. Par Charles Baltet. Paris, Librairie Agricole et Librairie G. Masson.

This handsomely printed pamphlet of some 150 pages contains an address made in the Trocadéro Palace during the International Exposition of 1889 by Monsieur Baltet, a well-known horticulturist of Troyes, who was a member

of various committees and of the jury of awards in the Horticultural Department of the Exposition. It is illustrated with 110 reproductions of drawings and photographs, most of them very interesting as regards their subjects, although not all of them as well printed as the illustrations of such a work should be; and also a beautiful folding plan, on a large scale, of the exhibition which gave the author his opportunity and his text.

This text Monsieur Baltet approached from the historical, not the merely descriptive, point of view; and, rehearsing the course of French horticulture during the century of which the Exposition celebrated the completion, he produced a treatise of permanent interest and value.

The first horticultural society of Paris was born in 1827, and held its first exhibition in June, 1831, while in the interval, in 1829, the Horticultural Society of Nantes held its first "floral fête." During the past sixty years similar associations have grown up all over France to the number of 200, receiving encouragement from the central government as well as from those of the departments and the towns where they exist.

Older than any of these French societies is that famous association which held its first exhibition at Ghent in 1809; but it may be recalled that Ghent was then on French soil.

The first unofficial French horticultural journal was issued in May, 1790, under the title *Feuille d'agriculture et d'économie rurale*, soon changing its name to *Feuille du cultivateur*, and Broussonet, Parmentier, Thouin and Vilmorin were among its contributors. This paper, says Monsieur Baltet, was really the grandmother of all agricultural periodicals, although the yearly *Almanac du Bon Jardinier* was first issued in 1754, and is still in existence. The *Revue Horticole* was born in 1828, but not until 1877 does Monsieur Baltet make mention of a journal devoted to a special class of plants.

Few plants new to the kitchen-garden have been introduced into France since 1789. The most important are the Tomato, re-introduced from Spain about 1820; the New Zealand Spinach, introduced in 1802, and the Stachys, brought from Pekin in 1882. But, on the other hand, there has been a vast activity in the popularization of vegetables previously unappreciated, and in the production of new and improved varieties. From the point of view of the kitchen-gardener, says Monsieur Baltet, this century may be called "the epoch of the Potato and the Sugar Beet." More than 3,700,000 acres of French soil are now devoted to Potato-growing; and many curious attempts have been made to find a rival for this tuber, even the tubers of Dahlia and of Boussingaultia have been conscientiously tested. The subterranean culture of Mushroom was first attempted by a gardener named Chambry in the year 1800. To-day there are more than 250 Mushroom-growers in the Department of the Seine, owning 3,000 beds, and annually producing more than ten million kilogrammes of the nutritious fungi.

The forcing of plants is mentioned by writers of the seventeenth century, but was then attempted only by a few wealthy persons. In 1735 Jean de la Quintinye offered "out-of-season" delicacies to Louis Quatorze, and his successor, Lenormand, placed before Louis Quinze, on the 24th of December, strawberries and pineapples grown in France, and at the same period melons were successfully forced. In 1776 strawberries were first forced for sale in midwinter by a gardener, who likewise grew Roses under glass. New fruits and vegetables were quickly added to the winter list, but the great development of cultivation under glass dates from about the year 1830, after the system of hot-water heating was perfected. A certain Jamain, who lived from 1787 to 1848, seems to have been the first to furnish grapes in midwinter, but the date of his first success is not mentioned.

In September, 1856, the first pomological congress was held in France, and Monsieur Baltet himself presided over it. The Pomological Society of France was soon afterward created, holding its sessions in various parts of the coun-

try. Its first medal of honor was given to Jean-Laurent Jamain in 1867.

Among interesting pomological details we may note that Monsieur Baltet names the Williams Pear, produced in England in 1770, as now holding the first commercial rank among the fruits grown in France, particularly good results having been produced by grafting it upon the American Thorn, called in that country Petit Corail—our Cratægus; and he says that the grafting of Pears upon different American Thorns may prove very beneficial as facilitating their introduction into districts where they do not flourish upon their own roots.

The interesting chapter on Dendrology embraces an account of the enormous importations of new species of ornamental and timber trees made during the century, and of the dissemination of striking varieties through the artificial propagation of natural sports. The rapidity with which an interesting tree makes a place for itself in commerce is shown by the fact that Sequoia gigantea, discovered in 1851, was introduced into France in 1853, and a single firm was able to sell 10,000 rooted cuttings in 1857, and 30,000 in 1860.

The list of our flowering plants has, of course, grown still more rapidly during the century. From the entertaining history of this development we can only refer to the forcing and blanching of Lilacs. This was practiced a century ago, but has grown to a great industry only within the last thirty or forty years. In 1870 a single gardener near Paris forced 20,000 Lilacs, and now there are 350 greenhouses in that vicinity devoted to the same purpose, while large supplies come from Nice and elsewhere. Legarde, in 1776, had forced Roses under glass, and about the year 1840 one cultivator had 50,000 Rose-trees in his greenhouses. In 1811 the *Almanac des Roses*, published in Troyes, enumerated less than 200 varieties, only six of which were remountant, while in the previous year 110 varieties had been ticketed with their names in the Empress Josephine's gardens at Malmaison. In 1829 a commercial catalogue named 1,020 varieties. The Bengal Rose was introduced from India about the year 1798, the Noisette Rose from North America in 1814, and the Bourbon Rose from the island of this name in 1817; the Tea Rose, brought from India to England in 1789, reached France about twenty years later, and the hybrids were produced by crossing these with the oriental species which had been known since the days of antiquity. The Moss Rose, introduced from England in 1807, was coaxed into a remountant habit in France about the year 1828. The passion for Orchids seems to have begun with the importation of the first Dendrobiums from India in 1812, and now some of their finest flowers may be found in quantities even in the public flower-markets of Paris. Conspicuous tropical plants with colored foliage are of still more recent introduction. Monsieur Baltet says that flowering plants of Hibiscus are largely used by the city of Paris when its buildings are decorated for public fêtes; and the fact is interesting, for, although some of the finest species are natives of our own southern states, we do not remember to have seen them utilized for decoration in this country. Dahlias were sent to France from Spain in 1802, not for their beauty, but with the idea that their tubers would be valuable for food. But they soon became favorites as ornamental plants; and the desire to produce a blue-flowered variety became such a craze that during the Irish famine of 1846 the Horticultural Society of Dublin offered a prize of £2,000 for a blue Dahlia. Without referring to the wonderful history of the Gladiolus during the past twenty-five years, we may add that the Lily-of-the-valley rivals the White Lilac in the affection of Parisians. The local market is supplied by 3,000 greenhouses and hot-beds owned by 500 gardeners, while flowers to the value of half a million francs are annually grown in the suburbs of Paris alone.

So wide was Monsieur Baltet's subject that it is no wonder he devotes but a short chapter to the architecture of gardens. What he says is historically instructive, espe-

cially with regard to the decadence toward a petty, rococo sort of treatment which marked the earlier half of our century, and from which, since about the year 1860, there has been a reaction in favor of broader and more artistic methods of landscape-work. He finds it right that a modified form of true landscape-treatment should be preferred, in a country which has become democratic, to the splendid formalities appropriate in the time of Louis Quatorze. And he notes with pardonable pride that between the years 1853 and 1889 the city of Paris expended eight millions of dollars in tree-planting, while its example was wisely and generously followed in all the other great towns of France.

Not the least interesting features of his book are the many portraits of famous horticulturists which it presents. And it is interesting to find how often the horticultural or the botanical passion has descended through several generations of the same family. The instance of the Vilmorin family, the fourth generation of which is now prominently engaged in horticultural pursuits, is already well known; and so also the family fame as botanists of the Darwins, the Hookers, the De Candolles and the Michaux. A less familiar example is illustrated by the portrait which Monsieur Baltet gives of Madame Aglaé Adanson, who lived from 1775 to 1852. This lady was the daughter of the botanical explorer who became a member of the Academy of France; in conjunction with Cels she laid out and planted a fine park and arboretum at Baleine; and two of her descendants, named Doumet, have been distinguished horticulturists.

Notes.

A neat little shrub is *Cytisus purpureus*, both in habit and in flower. It is prostrate, with twiggy growths, and is well adapted to a border-rockery. Just now these twigs are covered with large, pea-shaped, pink-purple flowers.

The rose season in this neighborhood began this week with the flowering of *Rosa rugosa*. The Moutan Pæonies are in full bloom, the earlier Pæonia tenuifolia having already matured its flowers. Columbines are the most conspicuous herbaceous plants of this time, and a majority of the species and varieties now enliven the gardens here.

Among half a dozen varieties of the common Lilac, the one that bears the name of the Berlin nurseryman, Ludwig Späth, must find a place. The flowers, which are borne in immense clusters, are nearly as dark as those of Philemon, which is still the darkest-flowered Lilac, but it is distinctly superior to that variety in its larger and broader leaves, those of Philemon being unusually narrow for a plant of the *Syringa vulgaris* type.

A pistillate tree of *Cercidiphyllum Japonicum* has produced flowers this year in Mr. John Robinson's garden, in Salem, Massachusetts. The *Cercidiphyllum*, which is the largest and most interesting tree of the forests of Japan, is proving itself admirably suited to flourish in the climate of our northern states, where it may be planted with advantage much more frequently than it is at present. Its peculiar habit and the beauty of its curious foliage in early spring, during summer and in autumn, when it turns bright yellow, will add interest and variety to our plantations.

The California fruit season, which began with small shipments of cherries as early as April 21st, is now fairly under way. The first apricots left Vacaville on May 4th, and these sold at wholesale in Chicago at the rate of nearly one dollar a pound. No apricots have yet reached New York, but large quantities of cherries have been received, and among varieties noticed are Early Black Guigne, Rockport and Black Tartarian. The Florida pineapple season opened here last week, and this fruit brought at the wholesale auctions nearly double the price paid for pineapples from Havana, a few fancy garden pineapples bringing as much as 35 cents each at wholesale.

Seedlings of *Magnolia Fraseri auriculata*, only six feet high, flowered in Mr. Thomas Meehan's nurseries, in Germantown, this spring. The flowers are large, greenish yellow in color, and are quite fragrant. On the same grounds *Mohrodendron (Halesia)* diptera is now in full flower, two weeks later than *M. tetroptera*. *M. diptera*, while the least hardy of these two species, does not suffer from the winters of this latitude.

Mr. Joseph Meehan writes that on the 10th of May a plant of *Viburnum Sieboldii*, twelve feet high and ten feet in breadth, was carrying more than one thousand cymes of fully expanded flowers. It is a strong-growing, almost evergreen species, and seems disposed to make a small tree. The variety *rotundifolium* of *Viburnum plicatum* was also in perfection there a week before the type, and is well known as the Japanese Snow-ball. It has roundish and entire leaves, the leaf-stalks and young shoots being tinged with red.

A late number of the *Agricultural Gazette*, of New South Wales, in an interesting account of the Murray Red Gum, *Eucalyptus rostrata*, states that the timber is of a rich red color, darkening with age, close-grained, durable, almost as hard as iron when thoroughly dry, of interlocked fibre, difficult to split, and when sawn will rend and twist if exposed to summer heat. It is largely used for paving-blocks, street-curbings, piles in damp ground, and in the construction of wharves and bridges, where it resists the attacks of marine borers and white ants. It is also admirable for railway-sleepers, wheelwright-work, engine-buffers and similar purposes. The tree grows to a height of 200 feet, with a diameter of from four to six feet, and even more. It acquires a girth of from three feet six inches to four feet in thirty years. It is propagated from seed, which is now a regular article of commerce, and promises to be one of the most successful species of *Eucalyptus* in California. The exudation, or kino, of the Red Gum is a useful astringent, which has become a regular article of commerce, and is growing in favor with medical men in England, America and Australia.

Last Monday the New York Flower Mission began work for the season at 104 East Twentieth Street, in this city, and cut flowers were received from villages and towns in New Jersey, Long Island, Connecticut and along the Hudson River. Ferns, violets, Jack-in-the-pulpits, marsh marigolds, wild honeysuckle, asters and field daisies were plentiful among the wild flowers, and pansies, lilacs, sweet-scented shrubs, snowballs, wistaria and branches of fruit-blossoms came from country gardens. A touch of bright color and a fragrant flower or bit of foliage was included in each of the little bouquets, which were quickly made up by members of the Flower Mission and carried to the sick in the free hospitals and in tenement-houses. Cut flowers and fruit will be received on Monday and Thursday of each week during the next five months. In the directions for shipping issued by the society it is requested that only fresh flowers in good condition be sent, and these should have stems not more than eight inches long. Each kind should be tied in bunches and kept separate, and the flowers must be well sprinkled and covered with wet newspaper. Packages addressed to the Flower Mission not exceeding twenty pounds in weight are carried free of charge by the express companies.

The fact that the periodical cicada, or seventeen-year locust, is to appear in two large broods this year is stated in the newspapers to have been announced by the Department of Agriculture, and the statements have caused some alarm among persons who confound these insects with the true locusts or so-called grasshoppers. The Department has made no such announcement this year, although Professor Riley issued a bulletin in 1886, in which an extended appearance of these insects was predicted for this year. The Entomologist of the Department has, therefore, issued a circular to say that the damage done by these insects is generally immaterial and is confined to the slight cutting of terminal twigs of fruit and shade trees by the females in the act of laying their eggs. The injury is only serious when the cicadas are exceptionally abundant and deposit their eggs in young nursery stock. The so-called Brood XII. is of the seventeen-year form and appeared in 1877 in the neighborhood of New York, Brooklyn and Jersey City, up the Hudson River as far north as Troy, and in parts of Connecticut, New Jersey, Virginia and the District of Columbia. They may be expected in these localities during June this year. Brood XVIII. is of the thirteen-year race, and with other tredecim broods its range is rather in the southern states. Its last appearance was in 1881. The larvæ feed under ground to some extent on the roots of plants and gradually rise to the surface as they near their full growth, and from about the 20th of May to the 1st of June they make their appearance in the nymph or pupa state, crawl up the trunks of trees, cast their skin, and the winged insects come forth. The adults live for five or six weeks and do some little damage, as has been stated, to trees and shrubbery by puncturing them for egg-laying. The eggs hatch in about two weeks, and the young larvæ drop to the ground and begin their long subterranean life.

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The Sassafras.

THE Sassafras is one of the most interesting trees of the forests of eastern North America. The last survivor of a race which at an earlier period of the earth's history was common to the two hemispheres, it is the only tree in a large and important family of plants which has been able to maintain itself in a region of severe winter cold. The structure of the flowers, like those of other plants of the Laurel family, to which the Sassafras belongs, is curious and not easily explained with reference to special adaptations to special ends; while the extraordinary virtues which were credited to this tree for nearly two centuries after its discovery have thrown a certain glamour of romance about its history.

Toward the middle of the sixteenth century the French in Florida heard from the Indians wonderful accounts of the curative properties of a tree which they called Pavame, and which, for no obvious reason, the Europeans called Sassafras. The tree and its virtues were first described by the Spanish physician, Nicolás Monardes, in his *Natural History of the New World*, published in Seville in 1569. The reputation of the roots and wood of the Sassafras as a sovereign cure for most human maladies soon spread through Europe, and extraordinary efforts were made to obtain them. To collect Sassafras was one of the objects of the English expedition which landed on the Elizabeth Islands, at the mouth of Buzzard's Bay, in Massachusetts, in 1602; and eight years later Sassafras is mentioned among the articles to be sent home in the instructions of the English Government to the officers of the young colony in Virginia.

For nearly two centuries the reputation of Sassafras was maintained, and many medical treatises have extolled its virtues, although now it is generally recognized as simply a mild aromatic stimulant; recently the thick pith of the young branches has been found to yield a mucilage useful to oculists, as it can be combined with alcohol and subacetate of lead without causing their precipitation. The oil of Sassafras, obtained from the wood and roots by distillation, is used to perfume soap and other articles,

although synthetical oils now replace it for most ordinary purposes; and perhaps, after all, the most useful product of the Sassafras-tree is the yellow powder prepared from the leaves by the Choctaw Indians of Louisiana, used to give peculiar flavor and consistency to gumbo filé, one of the best products of the Creole kitchen. The Sassafras is one of the common trees of our eastern forests, and is found from the shores of Massachusetts Bay to central Florida, with a western range which extends to beyond the Mississippi, reaching its greatest size in southern Arkansas and the Indian Territory, where individuals, fully eighty feet tall, with trunks six or seven feet in diameter, are occasionally seen. Usually, however, it attains more modest proportions, and trees exceeding a height of forty or fifty feet are not common; and in the north the Sassafras is usually even smaller, and is often shrubby in its manner of growth.

The bark on the trunk of a fully grown tree is often an inch and a half thick; it is dark red-brown and deeply divided into broad ridges which separate on the surface into thick appressed scales. The branches are short and stout and often somewhat contorted; placed nearly at right angles with the stem, they form a narrow, rather flat-topped picturesque head. The beauty of the Sassafras is increased by the lustrous green color of the young branches, which they do not lose until the end of two or three years, when the bark gradually turns rather light red-brown and begins to display the shallow fissures which mark the older branches and young trunks. The winter-buds are covered with loosely imbricated scales; of these the three outer enlarge but slightly when the branch begins to grow, and soon fall off; they immediately surround four or five scales which begin to grow with the opening of the bud, and at maturity are obovate, rounded at the apex, concave, coated with silky pubescence, light yellow and much reflexed, forming when expanded a sort of involucre. In the axils of these scales the flower-clusters appear, and inside and above them are two erect lanceolate scales infolding the leaves and falling when these begin to unfold. The bright color of the involucre, which gradually turns red in fading, makes the Sassafras conspicuous and attractive in early spring.

The flowers appear almost immediately after the opening of the bud, and are borne in slender drooping racemes two or three inches long, the males and females usually on separate trees, although perfect flowers may sometimes be found. The perianth or calyx is about an eighth of an inch across when fully opened, pale yellow-green, and divided nearly to the base into six obovate, narrow, concave lobes in two ranks, those of the inner rank being a little larger than the others; after the flower opens, the lobes spread and finally become much reflexed. There is no corolla; and in the sterile flower there are nine stamens arranged in three ranks and inserted on the short, slightly thickened calyx-tube; the filaments are flattened, elongated, slightly enlarged toward the apex, incurved and light yellow, those of the inner rank being furnished near the base with two conspicuous orange-colored stalked glands; the anthers are orange-color, fixed on the summit of the filaments, and four-celled, with cells superposed in pairs, facing the centre of the flower and opening from below upward by persistent lids; in the pistillate flower the stamens are reduced to minute, flattened, ovate, pointed slightly, two-lobed, orange-colored, stalked staminodia, or are rarely perfectly developed. The ovary, of which there is no trace in the staminate flower, is one-celled, light green and glabrous, with a single ovule and a simple elongated style crowned with an oblique, slightly lobed, stigma. The leaves, which begin to unfold as the flowers open, are involute in the bud, the lowest enfolding all those above it; they are ovate or obovate, entire, or often one to three lobed at the apex, the lobes being broadly ovate, acute and divided by deep broad sinuses; at the base they are narrowed into long slender petioles. When the leaves first unfold they are light yellow-green, and clothed on the lower surface

with delicate, lustrous, white hairs, and at maturity they are dark green on the upper surface, and pale and glabrous or pubescent on the lower surface, three to four inches long and two to three inches wide, the two forms being produced together on the same branch. The leaves fall in the autumn after assuming delicate shades of yellow, orange or orange and red. The fruit is a dark blue, thin-fleshed, oblong, aromatic berry, surrounded at the base by the enlarged and thickened, bright scarlet calyx-tube, and raised on a stalk which has lengthened during the summer, turned scarlet and grown thick above the middle. The fruit of the Sassafras is not produced very abundantly, although in some years it may be found in great quantities; and its aromatic flavor is so attractive to birds that they usually devour it as soon as it begins to color. The wood, which is orange-color, with thin, pale sap-wood, is very durable when placed in contact with the soil. It is coarse-grained, however, and not much used, except in fencing.

The Sassafras is a common native tree, and so is usually neglected by those who plant parks and gardens in the United States. No hardy tree, however, is more beautiful at every season of the year or better worth cultivating in the northern states. Its fragrant leaves and branches, its delicate inflorescence and showy fruit, its immunity from the disfiguring attacks of insects and disease, and the peculiar charm of the autumn colors of its foliage make it a beautiful object; and its relationship to the Camphor and other valuable trees of the tropics make it interesting.

The Sassafras is easily raised from seed, which should be planted as soon as they are ripe, when they will germinate early in the following spring, or by transplanting the suckers, which it often produces in great abundance. The thick fleshy roots, covered with thick, fragrant, light yellow bark, which penetrate deep into the soil, make the Sassafras a difficult tree to transplant, and only young plants should be selected for this purpose.

The illustration on page 215 of this issue shows a trunk of a venerable Sassafras-tree growing near Queens, on Long Island. It is made from a photograph, for which we are indebted to Mr. Edward Hallock, who informs us that this tree at two feet from the ground has a diameter of forty-three inches.

PEOPLE appear to lose their sense of moral responsibility where flowers are concerned. The most rigid moralist cannot resist his neighbors' lilacs, and the branch of an Apple-tree covered with flowers is not secure at the hands of the upright. During the spring the suburbs of all our cities are filled with flower-thieves—not only poor boys and girls who steal flowers early in the morning or after dark in the evening, to peddle them on the streets, but people who ought to know better. Millionaires who pride themselves on their uprightness and integrity do not hesitate to stop their carriages and fill them with lilacs or syringas, and women who would hesitate to cheat the Custom House (the highest test of female honesty) pretend to see no harm in entering private grounds and pulling up armfuls of choice flowers planted near the highway by some too confiding hand. Carriages loaded down with stolen flowers pour into cities every pleasant spring evening; and what is, perhaps, the worst part of the whole matter, these well-to-do marauders do not even pick the flowers carefully, but, in their haste and fear of detection, break down great branches or pull up tender plants by the roots. The high masonry walls which shut off all private grounds from the highways in the neighborhood of London are not, perhaps, attractive to the public, but from the point of view of the owner they certainly have their advantages.

THIS is the only season of the year when the white grubs which in summer do so much damage to lawns, mowing-land, Strawberry-plants and young nursery stock generally, by eating the roots, can be successfully fought. These grubs, the larvæ of the large May or Dorbug (*Lach-*

nosterna fusca), live under ground for three years, and in their last season are large enough to be destructive; in the third spring they emerge from the ground in the form of beetles and fly about at night, feeding and resting on Cherry, Oak and other trees during the day. They are attracted to lights, and may be trapped by suspending lanterns near their feeding-places over tubs of water. Flying heavily and clumsily, the beetles strike the sides of the lantern, fall into the water, and may be caught in immense numbers in this way. A little kerosene-oil poured on to the water prevents their escape. As the grubs live entirely under ground, their presence only being noticed after they have killed or weakened the plants upon which they feed, the only way to reduce their number is to kill the beetles, and so prevent them from laying their eggs; and where they abound traps should be set for them every night during the month of June. In some parts of New England, especially in the neighborhood of Boston and at Newport, Rhode Island, the grubs were particularly numerous and destructive last summer, and an unusually large crop of beetles may therefore be expected in these places now, although there are always more or less of them all over the country. Concerted action by land-owners and energetic trapping are the only means by which this troublesome pest can be kept in check.

A New Jersey Garden in Spring.

IN my garden the lengthening catkins of the Alders and Filberts are the first signs of the spring's awakening, followed soon by the flowering of various early spring bulbs, and as these begin to wane the Violets appear. Of these the most common kind is *Viola palmata*, with its varying forms. Its first flowers are seen early in April, and continue well into May; they vary from the deepest violet-blue to light purple, while some are nearly white. *V. palmata* is quite aggressive in my garden; thick patches spread beyond the limits assigned it and crowd out the more frail species of *Viola* as well as many other delicate woodland flowers. Its foliage is so vigorous and the flowers are so handsome that it is hard to pull them out like so many weeds, as it is often necessary to do, to save other species from overcrowding. *V. delphinifolia* grows well here with but little care, and thrives better in the garden than the Bird-foot Violet, *V. pedata*, which is very abundant in many places in the sandy Pines. The arrow-leaved *Viola*, *V. sagittata*, is common here, as are its varieties; it is more easily kept in place than *V. palmata*.

Among the leafy-stemmed Violets, *V. Canadensis* does well in the shade, and blooms all summer. The Downy Yellow Violet, *V. pubescens*, also likes the shade, and sends up strong stems a foot or more in height; if crowded its flowers will be scarce. The little *V. canina* will grow anywhere in the grass, and continue to flower nearly the entire summer. The sweet-scented Violet, *V. odorata*, is running wild in the grass, and gives an abundance of early flowers.

The beautiful little Rue Anemone flourishes in my garden along with the Wind Flower and Hepatica, and the snowy flowers of the Spring Beauties, *Claytonia Virginica* and *C. Caroliniana*, and the pure white blossoms of the Bloodroot are abundant here. The native *Dicentra*s are thrifty, and so is *Oxalis violacea*.

The charming Forget-me-not is established under an old Apple-tree, and the Bluets, *Houstonia cœrulea*, show delicate flowers from early spring until well into the summer. The Lily-of-the-valley flowers profusely and spreads almost as riotously as the common Violet. The Dog's-tooth Violet, which is not a Violet, but belongs to the Lily family, displays its pretty spotted leaves and rather large nodding flower.

The light-blue flowers of the handsome wild Larkspur, *Delphinium tricornis*, begin to open in April and continue until the middle of May. *D. tricornis* and the Larkspur-leaved Violet, *V. delphinifolia*, though they come from the

western prairies, are more at home here than many plants from our Pine barrens, which require great care in moving and handling. Indeed, nearly all of the plants already named come from the woodlands in the more northern and western states, and they all grow with less care than most of the herbaceous plants found in the Pines. I have several times carefully transferred our charming *Pyxidantha* from its home in the woods to a similar situation in the garden; but, even in the shade of an old Pine, it will not grow and thrive as it does in its own wilds. I have succeeded admirably, however, with *Xerophyllum*, which was transplanted several years ago, and some of these plants bloom each year.

Most of the flowering shrubs from the Pines bear transplanting and grow finely. *Andromeda Mariana* and the white Fringe-tree, *Chionanthus Virginica*, *Azalea viscosa*, the Sumachs, *Clethra*, Bayberry, *Amelanchier*, *Pyrus arbutifolia* and many others flower in my garden as luxuriantly as in their native wilds. Many single *Roses* of the *rugosa* type—red, white and pink—are in full flower in my garden by the middle of May. Some of them are climbing; others are in bush form. Late in May and early in June our own wild *Roses* begin to bloom, and some of them continue to flower all summer.

Vineland, N. J.

Mary Treat.

Redlands.

FROM the eastern crest of the San Timatteo Cañon, in California, 1,700 feet above the Pacific Ocean and fifty miles from it, the town of Redlands, now nine years old, lies along the slopes of uneven land, extending to the lowest level of the East Bernardino valley. Here its railroad-stations, stores and public buildings are clustered, adjoining the old town called Sugano, of which Redlands is still a part. At this point the great valley has an elevation of 1,300 feet above the tide, and extends north and west, with fields of barley, vineyards and Orange-orchards. Most of the surface is cultivated for twenty miles or more, until it is merged in the valley of the San Gabriel and leads out to the plains beside the sea. Its average width is twelve miles, but it has extensive ramifications into the higher valleys among the foot-hills, where grain and deciduous fruits are cultivated. All its eastern border is a wall of mountains, and the highest peaks of the San Bernardino Mountains, snow-crowned and glorious against the blue of the sunny skies, look down upon this abundant growth of fruit and cereals. Wheat ripens in these upper valleys, but barley, the usual food for cattle and horses in this latitude, is a more certain crop.

Three miles east of the city, a pass through the foot-hills gives entrance to the Yucaipè Valley, an extensive region, with an altitude of 2,000 to 5,000 feet, especially adapted in soil and climate to the growth of cherries, plums and other fruits. Apples also flourish there. All these valleys are only fertile when irrigated, but the water-supply is abundant, in vast reservoirs fed by the snow-covered mountains.

Business in Redlands thus touches many sources of prosperity. The residence portion commands admiration for its graded streets, pleasant homes nestled amid Orange-groves, and for fine avenues, many of them over one hundred feet wide and bordered on either side with a planting-space set with a single or with double rows of trees. These promise remarkable beauty, for exotic and native trees flourish together under these genial skies. Some of the older streets were planted with the Pepper-tree seven years ago. Here, as elsewhere in this state, this tree rapidly grows to a large size, and some of the trees are now twenty-five feet high, with wide-spreading branches sweeping to the ground. The Pepper-tree has all the airy spring of the Elm in its branches, combined with the pendulous grace of the Willow in the sweep of its pale-green foliage and its drooping racemes of crimson fruit. Nothing could be more desirable for beauty, but it begins to be whispered that it is the home of the black-scale, that

pest of the Orange-groves, and if this proves true, the Pepper tree is doomed in spite of its beauty. The Eucalyptus is not so well liked for street-planting, but where it is planted as a wind-brake it has already attained a height of forty feet. Another favorite tree, *Grevillea robusta*, which when young is used to decorate northern greenhouses, is here growing freely and is fifteen to twenty feet high, with a dense head of feathery bronze-green foliage. It is a beautiful shade-tree and is often planted alternately with the Century-plant, which here grows to a large size. The dark and glossy grace of the *Grevillea* contrasts well with the pale tints and stiffness of this desert-plant.

A word must be said in praise of the Fan-palm, *Washingtonia filifera*, which not only supplies to street-ornamentation the musical rustle of the leaves, with their fringes of delicate white threads, but also with its leaf-stalks artistically cut year by year, and the unique natural vase from which it seems to sprout.

Lemon-trees, laden with their ever-growing fruit, make a pleasing variety along these streets, and *Acacia mollissima*, when it is in flower, makes a yellow glow amid the shadows, and is often contrasted with the Olive-tree. Those who have only seen the historical Olive-trees, worn and gnarled by the centuries, can hardly imagine how pretty these young trees are. Lithe as young Birches, smiling back to the sunshine as it touches their demure suits of silver-gray with twinkling lights, like coquettish Quaker damsels, they look as if they could never grow old.

But the tree one meets at all points is the Monterey Cypress, a most attractive tree, with tender gray-blue foliage, of symmetrical and noble growth. There is a darker variety, which is more commonly known and which lends itself to any shape of man's device. It stands for hedges around the Orange-groves, or shields the flower-beds before the dwellings with gateways and arches and posts. The sides and tops are compact and square as stone walls, or gracefully rounded and curved. Some of the forms it has been made to take are grotesque and painful enough, and one feels sorry for the beautiful tree thus twisted out of all semblance of nature. But the Cypress seems never to complain, and seldom takes the liberty to die.

Guava and Laurestinus are here also cut into hedges, but they are not so adaptable, and have often to be replaced.

The rapid growth peculiar to this climate, where there is continuous growing weather, is observed also in the little park that crowns the crest of the cañon, and is the show-place of Redlands. Seven years ago these dry uplands could not boast a tree. Their broken sides, seamed with many a scar from fierce elemental wars in past ages, lay bare, and appeared hopelessly given over to Sage-brush and the jack-rabbit. Five years ago two men climbed these hills until at this point the whole unrivaled view lay before them—the grand sweep of the mountains and the curving plain with its more distant towns, Colton and San Bernardino, surrounded by outlying groves and Barley-fields; at their feet Redlands reached out in all directions, with vineyards and orchards, its steeper cañons terraced like a Roman amphitheatre to admit the level growth the Orange-tree loves, and the gentle slopes best suited for irrigation. They first asked whether water from the pipes of the great Bear Valley Reservoir could be carried to these heights. This key to the situation having been secured, land was purchased, two small reservoirs were made at the highest points of the new possession, two houses were built, and the place became a home for two families, who have since converted the estate into a paradise. For two years nearly a hundred men were employed regularly, and the work progressed rapidly. The soil is a deep red clayey loam, very rich in some parts, and in others requiring dressing, which was supplied freely. Where the natural inequalities could not be reduced, the ravines were terraced before they were planted, roads were made, and a park of 150 acres was laid out. All the road-ways are bordered by a line of cut stone, and where the sharpness of

the ascent compelled terracing, the terraces became on one side of the way a wall from two to four feet high. Along the crest of the cañon for a mile runs a sinuous road, from whence one looks down the abrupt descent into the depths of the Timattee valley, 800 feet below, and across to the San Jacinto mountains, that shut in this region from ocean winds. From this road other roads diverge at intervals, giving six miles of drive-way in the park. Near the two houses are flower-gardens and ornamental shrubs and trees, while the little plateau around each reservoir is made interesting by tropical plants. The lower slopes of the estate are covered with Orange and Olive groves, separated by thickets of free-growing Cypress. The steep sides of the ravines are hidden by an abundant growth of Eucalyptus, of which there are forty varieties here, some of them very curious and rare, and all now of good size. In other places are Grevilleas and many kinds of conifers.

The first object was to cover the ground, and as none of these trees were more than four feet high when planted, they were set thickly. Now, after five years' growth, they make a forest of twenty to thirty feet high, and crowd each other so that already thinning and transplanting are necessary. In these plantations are fifty varieties of Acacia, some of the trees twenty feet tall, with a free and beautiful sweep of branches. The long lines of flowers bordering the curbstone along the drive-ways do not seem out of place in this country of semi-tropical luxuriance. There are countless plants of Verbena, Gillia, Petunia, Sweet Alyssum, Coreopsis, Eschscholtzia, Pansy and other flowers. Along the steep banks above the higher walls is a continuous mass of Periwinkle, Vinca major, its broad shining leaves hiding the brown earth, to which it clings, while it sends up stalks crowned with large blue or violet flowers, its long vigorous stems making a curtain for the gray walls.

The effect of flowers thus massed in simple lines for long distances is very striking and unique. I suppose it would only be possible in a climate where flowering plants grow so easily and can be so constantly fed with water. I will not speak of the Roses, of which there are many rare varieties. The great inequality of surface in this domain, the depth of the ravines, the sharp ascent of the winding terraces, make great variety of flowers and trees possible within a small space, and of these conditions good advantage has been taken. The Acacias, in the glory of their bloom in March, make sunshine everywhere. One of the most beautiful is *A. Riceanea*, bearing its flowers in solitary axillary spikes amid linear dark green leaves, and the willowy grace of both branches and flowers is charming. The Silver Wattle, from Australia, *A. dealbata*, also attracts attention, but the most brilliant of its kind is the Golden Wattle, *A. pyrenantha*, with its abundant bloom and brilliant pure color. The Date Palm has only small representatives here, but Agaves and Yuccas alternate with the Fan Palm, and scattered among these are many garden forms of different conifers. The wonder of it is that all this beauty has been created on a bare hill-side in five years.

Redlands, Calif.

M. H. P.

A Rich Field for the Plant-collector.

ALTHOUGH China has been more or less in touch with the seats of scientific learning for several centuries, and is still contributing botanical surprises to the scientists of Europe and America, it is not generally known how imperfectly that country has been botanized, nor the peculiar danger which threatens its indigenous flora and has already worked irretrievable havoc on many of the unrecorded marks of the world's history.

China is pre-eminently a rich field for the plant-collector. Its vast population has long felt the tension of the struggle for existence, and many plants of economic value have been discovered by them that are still but slightly known to the outside world, and its indigenous flora, particularly that of the mountainous and less accessible regions, is

almost unknown. Much good work is being done by residents in China who have botanical tastes, but little has been done since the days of Wilford, Fortune and Maries by professional collectors. It is difficult to account for this on any other grounds than a lack of funds or of enthusiasm among botanical societies and horticultural firms.

In the coast regions of south China the larger portions of the forests have long been cut down for fuel, and the destruction is still going on among the woody shrubs and brush-wood. The fuel now used by the villagers is chiefly grass. It is usually burned at the end of every dry season, as the natives believe that the charred remains help to fertilize the succeeding crop. Only those who have seen this practice can fully realize how destructive it is to plant-life. Only in the deep moist ravines, in copses surrounding villages and rock-guarded slopes, are rare indigenous plants able to exist. Even there the fire occasionally penetrates, and it is painful to see the desolation it causes.

No system of forest-conservation is properly followed in China, except, perhaps, in the northern portions of the empire, where the Ginseng-plant grows and is protected as an imperial monopoly. An interesting result of prohibitive measures in regard to the burning and depletion of uncultivated land has been strikingly exemplified in Hong Kong during recent years. A system of forest-protection has been in vogue there for the last fifteen or twenty years, and though this island, which is only twenty-nine square miles in area, has been continually botanized since 1841, new species are still being discovered. A few years ago I found additions to such genera as *Podocarpus*, *Aspidistra*, *Aristolochia*, *Ipomoea*, *Amorphophallus*, *Arisæma*, etc., and it is probable that these would have been ultimately lost to the flora of the island but for the timely intervention of the government.

Horticulture has been enriched by a large number of plants from China, but a very large quantity of good horticultural material has not yet been exported, or is only represented here in dried specimens in herbaria. Knowing, as I do, the imminent danger which threatens to exterminate many endemic and sparsely distributed Chinese plants, I mention in the following notes a number of those plants which I am sure would be worthy acquisitions to horticulture.

Symplocos decora I put first in the list, as it is my favorite flower. It is a small *Camellia*-like tree or shrub with dark green leathery leaves, producing its flowers in axillary clusters along the shoots. The petals are white, and sometimes tinged with a delicate shade of azure-blue; the cup of the flower is filled with a free cluster of slender stamens, each crowned with a pale yellow anther. The size of the flower varies from one-half to three-quarters of an inch in diameter, and the slightly globular clusters are from three to four inches across. In the early spring it bursts out into a profusion of delicate blossoms that are gracefully blended with the glossy green leaves. Its indescribable delicacy, lightness and grace, combined with its delicious fragrance, make it especially charming. It can be grown in pots like a *Camellia*, and for all decorative purposes it is superb. Until a few years ago it was considered very rare, but I found it growing abundantly at an elevation of 2,000 feet on some of the hills in the Kwang-tung province.

Mucuna macrobotrys is a robust climber, suitable for a greenhouse, and may be hardy; if it should prove entirely hardy it is likely to rival the *Wistaria*, which it resembles somewhat in habit and form of flower. The individual flowers are four inches long, creamy-white, boat-shaped, terminating in a hard curved beak. The gigantic pendulous racemes hang like bunches of grapes, and sometimes measure sixteen inches in length and twelve inches across the shoulder. This plant commends itself to lovers of the conspicuous and uncommon. Its pods are eighteen inches to two feet long and the seeds are proportionately large. I once sowed some of the seeds and they did not germinate until a year and a half afterward. One of the young plants was sent to Kew,

where I saw it growing vigorously nearly a year ago, in the temperate house.

Barthea Chinensis is a rare and beautiful plant, first named *Dissochoeta Barthei* by the late Dr. Hance, but it is now considered a new genus. It is a shrubby plant, with brownish-green, oval, elliptical leaves two to three inches

was first discovered in Hong Kong about thirty years ago, where there were only one or two plants, and it had not been seen in quantity until I found it a few years ago on the hills of the mainland at an elevation of three thousand feet.

Enkianthus quinqueflorus is greatly prized in south



Fig. 38.—An old Sassafras-tree on Long Island.—See page 211.

long and one and a half inches broad. Its flowers, of which there are three or four bunched at the ends of the branches, are two inches in diameter, white shaded with pink. The petals have a waxy texture, and I feel sure that it would find appreciation as a greenhouse-plant. It

China, where it is called the New Year Flower, as it is expected to blossom at the time of the Chinese New Year. Great difficulty is experienced by the authorities in Hong Kong in suppressing the cutting of this plant, since native shopkeepers and householders fill

large vases with it during the festive season, when it is in great demand. It is an erect-growing deciduous shrub, and is most beautiful when it begins to bud forth in February. The leaves are ovate-oblong, two to four inches long, and crowded at the ends of the branches. When they first sprout they are of a rich glossy brownish-red. The flowers are half an inch long, broader at the mouth and bell-shaped. The color varies from white or pink to deep red. They are pedicelate, drooping, and hang several together round the stem. The inner scales of the imbricate bud lengthen out into beautifully colored bracts, varying from deep bronze to pale pink, and they retain their color for some time after the flowers have faded. The Chinese value the shrub for this characteristic. Cut stems from three to six feet long, when kept in vases with water, will keep well and look gay for two or three months. The wild plant has not yet been found outside of south China.

Rhododendron Westlandi is a new species which I found at an elevation of three thousand five hundred feet on the island of Lantao, near the mouth of the Canton River. It is a tree about twenty feet high and bears large clusters of rich lilac-colored flowers, from seven to nine inches in diameter. It is described by Hemsley in the *Index Floræ Sinensis*. I believe it is fairly hardy, as I found a number of trees growing on the top of the mountain, exposed to the full fury of the typhoon and the cold temperature of that elevation. I noticed that the main trunks of some of the trees had been cut down, probably for firewood.

Salvia scapiformis is a pretty little plant found a few years ago at the northern end of the island of Formosa. It has deep olive-green leaves and throws up a thicket of scapes of lilac-colored flowers. It continues to blossom for several months. The plant grows in a peculiar way, branching from the very base and throwing out leaders. This enables the grower to increase it rapidly by division. It can be used as a bedding-plant, and is effective even when not in flower. Dr. Hance, who described it, remarked that it was botanically interesting on account of its nearest relative being a plant from Nepal.

Asarum macranthum is a handsome little foliage-plant, also from the northern part of Formosa. The leaves are heart-shaped, acuminate, from three to five inches long and three inches broad, and curiously mottled with different shades of green. The peculiar dark chocolate flowers lie on the top of the ground. It makes an excellent stage-plant in six-inch pots.

Aristolochia Westlandi is a strong-growing creeper, with linear-lanceolate, entire leaves, eight to twelve inches long, light green and leathery. The flowers are striking and peculiar, with the tube bent in the Dutchman's-pipe shape, usual in this genus. The perianth is softly hairy outside and expands into a flat shield-like flower, six inches long by four inches wide, and is curiously veined with different shades of yellow on a deep purple ground. An excellent figure of this species appeared in the *Botanical Magazine*, t. 7011. I only found one plant on the lowlands of the Kwang-tung province, but there are probably more in that district. The original plant is now growing in the Victoria house at Kew.

Manchester-by-the-Sea, Mass.

A. B. Westland.

Cultural Department.

Seasonable Garden Notes.

THE Tree Pæony, *Reine Elizabeth*, is the most striking flower of the week. It is a clear rosy pink in color and of immense size, and, although very double, it does not appear lumpy. The flowers are highly effective against the foil of slightly glaucous foliage, and a well-grown specimen of this variety is among the noblest of garden-plants. I have had some disappointments with Moutan Pæonies in the way of securing varieties with satisfactory flowers, for many of them are not worth garden room. Among these I rate the ordinary form having white petals, with dull red or pink bases. Some of the reds are also very dull and blue-tinted, and these de-

fects are great discouragements after growing a plant for several years before flowering, as is often necessary with these Pæonies. There are said to be some beautiful single-flowered Japanese kinds, about which, perhaps, some one can give his experience. Tree Pæonies start rather early, and should be retarded in early spring when this is necessary by placing some shading to the south of the plants.

The Poppies are just bursting into flower, or, rather, the more showy ones are coming into bloom, the Iceland Poppy having commenced to flower several weeks ago. The Tulip Poppy, *P. glaucum*, has been the first to open its satiny petals, with the Shirley Poppies close seconds. The beautiful Tulip Poppies are of a rich clear crimson-color; the outer petals spread fully six inches, and are blotched with black at the base. These Poppies are annuals, and the secret of their full growth and flowering in the middle of May is that the seeds were sown last fall before the ground became too cool. These germinated and made small plants before winter set in, and have made progress at every favorable opportunity since. Of course, there have been losses during the winter from the heaving out of plants, but they are still rather crowded over the bed of early bulbs which they now cover. This is a good rotation, where one has early-flowering hardy bulbs which are not protected or mulched. The Poppies follow quickly after the bulbs, and by the time the leaves of the bulbs are ripe the Poppies will have about passed their usefulness. Then the beds can be cleared up, ready for any further changes or plantings. If the bulbs are to remain undisturbed a crop of *Portulacca* or Dwarf *Nasturtiums* can be had from such a bed without undue watering and stimulation of the bulbs. Fall-planting of hardy annuals is familiar to every reader of garden papers, yet it is seldom practiced in the ordinary garden, and even those seedlings which accidentally germinate are ruthlessly dug under by the presiding genius who tidies up our gardens and furnishes us blank wastes of earth for our winter prospect.

The hybrid German Irises are in mid-season now, and though a much-needed storm has been raging with unseasonable fury, their flowers do not seem to be more affected than those of other plants now in bloom. Many of these hybrid Irises are very beautiful, and as handsome as any plants of any season. As a class, considering all things, a selection from them would make the most satisfactory collection of garden Irises, if only one section of these plants is to be grown. Among them, however, there are many poor forms which might well be dispensed with. In this lot I should include the hybrids with dull white flowers and linings of dreary dull purple. The smoky kinds are odd, and many of them handsome in the garden, but they are not useful for decoration, being too dull for the dim light of the house. Some seventy named kinds in my garden, from one dealer, might be fairly noted under half this number of names. At my leisure I am seeking instruction and amusement in trying to class them according to types; this in many cases is perplexing, as the various types seem to have been interbred promiscuously.

A white Iris in any section seems to me the most beautiful, and those of perfect purity are infrequent. The *Bride*, or *I. Germanica alba*, as it is sometimes named, is not a pure white or a true *I. Germanica*. Mr. Whittall sent me in 1892, however, an Iris which, now flowering for the first time, shows a flower of perfect purity of color, with only slight green veins in the standards. This has a yellow beard, shading to orange at the base of the claw, which is veined with brown. The fall is tongue-shaped, and it thus resembles *I. Germanica*, but the ovaries are ribbed and the spathes rather persistent. So, although the plant has also the same habit of bearing two flowers at the top of the stem, with single ones on the lateral, and has similar foliage to that of *I. Germanica*, it is probably another species. There is a stateliness and grace about these white Irises and the light purplish blue hybrids of *I. pallida* which is very pleasing. Among the numerous other forms I enjoy most the yellow forms of various shades with combinations of maroon. Then there are also pink and rosy forms in various combinations, not to speak of the frilled petaled kinds in blue and white, like the well-known *Madame Chereau*.

We are also in the middle of the Columbine season. These are plants which should be favorites in all gardens, for the flowers are charming, mostly bright, graceful and effective. One of the best garden investments I ever made was an assortment of *Aquilegia*-seeds, such as are packed in Germany and sold by all florists. From this collection I had a host of plants and a good start for a nice collection. Many of these have maintained themselves in the borders for years, and new seedlings are always appearing. The long-spurred

kinds have a special fascination for me, and new Columbine-seeds are among the things I am always ready to try. I have this year a new yellow one in the way of *A. chrysanth*, which is much earlier. I am doubtful of its origin.

The water-garden was beautified ten days ago by the flowers of *Nymphæa Laydekeri*, and these were soon followed by the tiny blooms of *N. pygmæa alba*; those of *N. alba candidissima* are now opening, and the surface of the tank is dotted with the buds of all the hardy species. All these, as usual, wintered well in my shallow tanks, and are growing with considerable vigor, although they have not been touched or fertilized since last season, the weather having been too cold to permit of much stirring of the water. Next week we hope to plant out the tender *Nymphæas* and to make the final setting of aquatics for the new season. *N. Laydekeri* is a beautiful Water-lily in its different phases, as it deepens in color from day to day. It does not open much before 10 o'clock in the morning, and hence appeals somewhat to the imagination, when the grower is a business man and can seldom see it fully expanded.

Elizabeth, N. J.

J. N. Gerard.

Some Hardy Plants in Vermont.

CALYPSO BOREALIS is the first Orchid of the northern species to flower. I have thus far not been able to induce this plant to bloom the second year in the garden. If it is lifted after flowering and taken to the right location, in a dark, Arbor-vitæ swamp, where the right temperature, shade and moisture are offered, it will come up in the autumn again and form its flower-bud and leaf. But this is the only way in which I have been able to keep it. *Cypripedium fasciculatum* is a native of the north-western United States, principally Washington and Oregon, I believe. It is the earliest Lady's-slipper to bloom. This little plant has done well with me this spring, and nearly every specimen flowered. It was planted last autumn and protected from severe frost by a covering of dry leaves. Like *C. acaule*, it has but two leaves near the ground, and a very short stem, with one to five minute green and purple flowers. If these flowers were on a larger stalk and separated from one another more, they would be much more attractive. But the flowers are all in a cluster, just above the leaves, and the small lip, or pouch, is so hidden by the other parts of the flower that this species scarcely resembles a Lady's-slipper.

Lychnis alpina, six to eight inches high, with pretty heads of rose-purple flowers, is now in bloom. *Veronica repens* is a pretty little prostrate species, forming dense masses of dark-green foliage less than an inch above the surface. The flowers are nearly white, with a trace of blue, and about half an inch wide. Just now the entire foliage is hidden by the flowers. A bed of this plant at a little distance resembles a patch of snow. The entire surface of the ground is hidden all summer by its dark-green foliage. It is hardy, and seems to like the sun. *V. gentianoides*, also now in flower, is a native of the Caucasus, and about fifteen inches high, with loose spikes of pretty light-blue flowers. *Viola alpestris* shows a complete mass of bloom. This is a desirable species, entirely hardy, and one of the easiest to grow.

The European Globe Flower (*Trollius Europæus*) is a fine species for cutting. The flowers not only remain fresh for a long time in the garden, but they are durable when cut and placed in a vase. *Aubretia Leichtlini*, with rose-purple flowers, has been in bloom a long time. It is a low species, three to four inches high. *Leucocrinum montanum*, from northern California, is now in flower. It is one of the Lily family, having white star-shaped flowers about an inch wide, several in succession from a plant. It is of no value for cutting, but is quite hardy and does well in a sandy soil.

Charlotte, Vt.

F. H. Horsford.

Good Varieties of Hyacinths.

THE following varieties of Hyacinths have proved to be of distinct colors and superior qualities under careful trials made by Mr. A. M. Kirby, of Jersey City. The selections have been made from 276 varieties imported from Holland in the fall of 1893 by Peter Henderson & Co.

PURE WHITE.—Single: *Alba Maxima*, tall, well-furnished spike; bells very large, of a thick waxy substance; color, clear, satiny white. Double: *Grand Vainqueur*, large spike, filled and well rounded at the summit; bells large; color, clear alabaster-white.

ROSY WHITE.—Single: *Grand Blanche Imperiale*, fine spike, large thick bells completely hiding the stem; a charming

color, rosy or blush white. Double: *Triomphe Blandine*, spike tall, well filled to the well-rounded top; color, a dainty peach-blossom pink, showing through a veil of white, and a tinge of carmine stripes in the centres of the petals. This is a variety of exquisite beauty.

PINK.—Single: *Delicatissima*, extra large broad-petaled bells; the color waxy blush, tinged with salmon-pink. Double: *Sir Walter Scott*, large bells and first-class spike; an exquisite rosy-pink.

RED.—Single: *Bazaine*, tall, well-filled spike; a bright rich crimson-scarlet. Double: *Louis Napoleon*, bells and spike large; a showy bright crimson.

CLARET MAROON.—Single: *Lord Mayo*, a tall, well-filled spike; color, rich claret-red, with white eye, giving a unique effect. Double: *Lieutenant Waghorn*, dark red with wine-red centre.

CHINA BLUE.—Single: *Blondin*, a beautiful, well-filled spike, with large bells; silvery lavender in color, the outside of the tubes a darker shade. Double: *Madame Marmont*, tall, slim spike, compactly filled and well rounded at the summit; two spikes to a bulb. A charming combination of coloring, a blush white ground, shaded with azure-blue, giving a dainty porcelain effect.

BRIGHT BLUE.—Single: *Grand Maitre*, the clearest blue Hyacinth on the grounds; large bells on an immense tall spike, followed by several smaller spikes; in color a pure ultramarine shaded violet; an unusually robust grower. Double: *Van Speyk*, immense, very double, wide-open bells, entirely hiding a tall, stiff spike; color, deep lavender, striped and tipped with dark blue; a beautiful Hyacinth.

DARK VIOLET BLUE.—Single: *Von Schiller*, very large and showy; rich purplish blue. Double: *Robert Burns*, a good spike with large bells; dark indigo shaded purple.

BLACK.—Single: *Sir Henry Barkley*, a good spike; rich, glossy, purplish black. Double: *Othello*, broad, short, compactly filled spike; a beautiful deep black-purple.

YELLOW.—Single: *Bird of Paradise*, compactly furnished; good spike; a pure yellow in color. Double: *Jaune Supreme*, the best double yellow with me; spike tall, stiff and fairly well furnished; bells extra large; a deep, creamy yellow inside, the back of the bells much deeper.

SALMON.—Single: *Rhinoceros*, good spike; rosy orange in color. Double: *Minerva*, a beautiful color—rosy ecru, with a broad darker blotch in the centre of the petals.

Sobralia macrantha.—This is one of the oldest inhabitants of Orchid-houses, having been introduced to cultivation fifty years ago. It has been neglected in recent years, partly on account of shy flowering and partly in favor of other Orchids which take up less space in the greenhouse. Its reputation for shy flowering has not been altogether undeserved, but now that the wants of Sobralias are better understood as more species are introduced, there is no reason why they should not, with one exception, flower with as much regularity as a *Cypripedium*. We have a plant now bearing sixty-one flowering stems, and all of these are showing flowers. Last year we had but one flowering growth on the same plant, and the reason is worth recording. Two years ago this *Sobralia* was wintered in the warmest house, and did not flower, but kept on growing because it had no resting-period. Last winter the plant was placed in a cool house where *Cinerarias* and *Primulas* were grown, and the result is every stem is now flowering. The plant makes a fine appearance, and the flowers are as large as those of a *Cattleya* and very fragrant. The color is rich crimson-purple. Since the introduction of the lovely white-flowered Sobralias, there has been a decided interest taken in the genus. They are not so tall-growing as the older varieties, especially *S. Cattleya*, a species that has never been known to flower in cultivation, though it is said to be the king of the genus and of very robust habit. The Sobralias are natives of Mexico, Guatemala and various parts of South America, extending as far south as Peru. They require pot-culture, as they are terrestrial Orchids with thick, fleshy roots that reach out a considerable distance in the potting-material, if supplied with a suitable compost.

South Lancaster, Mass.

E. O. Orpet.

Pruning Grape-vines.—I wish to call attention to the value of Professor Massey's suggestion (see page 178) that in North Carolina it is not wise to prune Grape-vines until late March. It does not seem to be generally understood that vines, trees and shrubs push into growth sooner when pruned than when untouched. My outdoor Roses, which are near a dwelling-house, are liable to injury from late freezings. They are left

unpruned to the very last. Florists who force hybrid Roses are well aware that pruning starts their plants to grow. They take advantage of this fact to get a succession of flowers by pruning a part only of the plants at one time. This brings them along, one lot after another.

Referring to the loss of plants by late freezings, of which Professor Massey speaks, I may say that, except the flowers of *Magnolia conspicua*, which were ahead of others by a few days, not a fruit-tree nor an ornamental tree of any kind was injured here either by late frosts or the winter weather.

Germantown, Pa.

Joseph Meehan.

Correspondence.

Transplanted Trees.

To the Editor of GARDEN AND FOREST:

Sir,—In the winter of 1891-92 I transplanted on my grounds at Cornwall-on-the-Hudson a large Horse-chestnut-tree. During the first summer the tree naturally did not show much vigor. In the spring of 1893 the leaves and blossoms started well, but soon commenced to blight, and their growth seemed to stop; this spring the tree acted in much the same manner.

The soil is heavy clay, with an underlay of rock. Everything was done to make the transplanting successful, with the possible exception that the tree may not have been cut back sufficiently. Will you advise me how the tree may be helped?

Young Horse-chestnuts planted in the spring of 1892 show the same weakness evident in the larger tree, but in a less degree, while young Maples and Lindens, also planted in the spring of 1892, are doing well.

Cornwall-on-the-Hudson, N. Y.

D. G.

[Large transplanted trees should not be allowed to become dry at the roots until they are well established; and the vitality of this Horse-chestnut can probably be strengthened by giving it an abundant supply of water at the roots in dry weather. The best way to water a large tree is to make a shallow dish about the trunk extending out as far from the trunk as the ball of the roots, and then fill the dish with water; after the water has soaked away, the operation may be repeated until the whole ball and the ground about the tree is thoroughly saturated. The soil should then be replaced and a good mulch of hay or freshly cut grass put over it to check evaporation and keep the ground cool and moist. A newly planted tree is often helped, if the lower part of the trunk is bare of branches, by protecting this from the sun by wrapping it with straw or cloth. Syringing the foliage and branches late in the afternoon or early in the morning is also beneficial to newly planted trees.—Ed.]

Gardens in Wellesley, Massachusetts.

To the Editor of GARDEN AND FOREST:

Sir,—A visit to Wellesley is always pleasurable, but at no season of the year is it more so than toward the end of May. The Rhododendrons and hardy Azaleas are now coming into bloom and will soon make a magnificent display, when Mr. H. H. Hunnewell's beautiful estate will be visited by thousands, as in previous years at this season. Apart from these special features there are endless objects of interest which cannot fail to impress the visitor. The Italian garden is always fresh and inviting, and the view from its summit over Wellesley Lake, with its well-wooded banks and the beautiful college on the opposite heights, is sufficient to repay one for a visit at any season of the year. The more tender Rhododendrons, golden and silver Hollies, Irish Yews, *Araucaria imbricata* and other shrubs and conifers are now all in their summer quarters. The large circular tent devoted to Azalea Indica contains a fine assortment of specimens which will be at their best toward the end of May. In the conservatory, in a good collection of fancy Pelargoniums, the most striking are Duchess of Teck and Madame Thibaut, and large quantities of Lilliums, Deutzias, Spiræas, Polygalas, etc., give this house a very cheerful appearance. In the division chiefly devoted to Orchids is a rich showing of these plants in flower. Cattleyas are the leading feature, and comprise quantities of *C. Mossiæ* in variety, *superba* being the finest form, *C. Mendelii*, *C. Warneri*, *C. Lawrenceana* and *C. citrina*. Some very fine baskets of *Dendrobium crassinode* and *D. Wardianum* are suspended from the roof. *C. nobile nobilium* and others of the noble family are on the wane, but

D. Dalhousianum is in fine bloom. Among the *Cypripediums* *C. grande* is now in fine condition, also *C. Swianium* and *C. Ananthum superbum*. The charming pure white *Angræcum Sanderiana* is represented by some well-flowered specimens. *Lælia cinnabarina* is in excellent condition, and there are capital specimens of *Chysis aurea*, *Cymbidium eburneum*, *Trichopilia suavis*, and *Odontoglossums* in variety. Considerable skill is required to check the Orchids so that they shall flower along with the Rhododendrons, for the natural blooming season of many of the species is much earlier, and many plants suffer somewhat from the retarding process. In another plant-house a nice batch of *Ærides* in variety are bristling with flower-spikes. *Dendrobium suavisimum* is just opening, while in a cold house *Odontoglossum* (*Miltonia*) *vexillarium* gives promise of a good harvest of bloom a little later on.

In the fruit-houses, several divisions devoted to Nectarines and Peaches are carrying fine crops of fruit, while the vineries look equally promising. The first glass erected on the place was being taken down at the time of my visit a few days ago. Mr. Harris informed me that it had stood nearly fifty years.

On the estate of Mr. Walter Hunnewell a batch of well-flowered Gloxinias in one house is noteworthy. Mr. Hatfield had just finished putting Chrysanthemums into their blooming-pots, and these are highly promising. In the vegetable-house, which is used as a house for single-stem Chrysanthemums later in the season, there is now a good variety of crops, comprising Cauliflower, Carrot, Beet, Lettuce, etc. The most interesting object at this season of the year on this place is the rock-garden, which is to the north of Mr. Hunnewell's mansion, and descends rather precipitously almost to the shores of the lake. Mr. Hatfield has converted a considerable portion of what was previously a thicket into a most picturesque and attractive rock-garden. The paths are arranged in skillful detours, and ascent and descent are quite easy. Most of the plants have now become thoroughly established, and many are seeding and coming up in quantity. Masses of Phlox, *Papaver nudicaule*, *Trillium*, *Mertensia* and other perennials make a beautiful display, and a large variety of other plants give promise of a succession of bloom for months to come. While rock-gardens are a feature in almost every good private place in Great Britain, and are always interesting, in this country they are comparatively rare as yet. Considering the enjoyment to be derived from rustic gardens such as these, it is surprising how few there are, especially in this section, where suitable rocks may readily be had.

Taunton, Mass.

W. N. Craig.

The Forest.

Mixed Oak and Beech Forests of the Spessart.—I.

THE vivid sketch of the magnificent hardwood reserves still remaining in the states south of the Ohio River, by Dr. Charles Mohr, of Mobile, which appeared in GARDEN AND FOREST, vol. vi., p. 21, has called to my mind the wealth of old-standing Oak timber in the Spessart, one of the most interesting mountain-ranges of central Germany. North American forests contain a great variety of species, whereas the forests of which I am speaking consist of two kinds only, the Beech, *Fagus sylvatica*, and the Oak, *Quercus sessiliflora*, the former being replaced in valleys and on low ground, exposed to night frosts, by the Hornbeam, *Carpinus Betulus*. The Birch, Maple, Lime-tree, Ash and Wild Cherry are very rare, and besides these there are only a few soft-wooded trees here and there, like the Aspen and Willow. Conifers have, it is true, been introduced on a large scale during the present century, and the groups of Larch, the woods of Scotch Pine and Spruce give a greater variety to the forests, but they are not indigenous in the Spessart. Again, forest-trees in this portion of Germany are considerably smaller than in most of your forests. The rich soil of the valleys in the Alleghanies is said to produce Yellow Poplar-trees 200 feet high, with a trunk-diameter of over ten feet, whereas the tallest Oak in the Spessart does not exceed 150 feet with a diameter of five feet. But, however different the aspect of forests on the two sides of the Atlantic may be, they have a point in common, the more valuable hard woods are associated with other species of little or no commercial value. In both cases, therefore, the forester has to address himself to the same difficult

task, to work the forest in such a manner as not to diminish, but rather, if possible, to increase the proportion of the more valuable kinds. An account of some of these German forests and the approved methods of regenerating them ought, therefore, to be instructive to American readers.

SPESSART—GENERAL DESCRIPTION.

The Spessart selected for illustration is in Franconia, and its highest point, the Geiersberg, being 1,900 feet above sea-level. The prevailing rock is new red sandstone, and the hills have rounded outlines, mostly with gentle slopes. The soil is a light, sandy loam, of itself not very fertile, but fortunately enriched by a large admixture of vegetable-mold, the result of uninterrupted forest-growths during thousands of years. This soil, where deep, is capable of producing tall cylindrical, well-shaped stems. From the top of the Geiersberg the surrounding country presents itself as a boundless sea of forest, clothing ridges and valleys almost without a break. Villages there are, but they are not numerous, and most of them are down in the valleys, and therefore concealed by the tall woods which surround them. In June the tender, light-colored leaves of the Beech form a marked contrast with the darker foliage of the Oak. The picture is varied by black patches of Spruce, by the bluish green of the Scotch Pine, and here and there the tops of tall Larch-trees stand out from the rest readily distinguished by the brilliant light green of their new leaves. Game is plentiful. If you start early in the morning you are sure to come across numbers of red deer; and wild pig, with their young, are often seen. The forest is dense and unbroken, except where fields surround the villages and narrow bands of meadows skirt the stream in the valleys.

FOREST-RIGHTS.

The light sandy loam which overlies the red sandstone owes its fertility mainly to the accumulation of vegetable-mold. Unfortunately, however, a practice prevails in the greater portion of this forest-district which seriously interferes with this accumulation of vegetable-mold. This is the removal of litter—the fallen leaves which cover the ground. The soil around the villages is poor, and must be manured heavily. The area of the fields is limited, and so are the meadows. Root crops can only be grown to a small extent, and the cattle must largely be fed with straw. Hence forest-litter is indispensable, but by its removal the ground gets denuded, the soil is impoverished and the forest-growth suffers. Originally this practice was permitted, because the population was scanty and its hurtfulness was not fully realized. Gradually population increased, and, the practice being continued unchecked, a right was acquired by prescription, and when in 1814 the forest was incorporated with the kingdom of Bavaria there was no help for it but to acknowledge the right and to regulate its exercise so as to limit the damage to the forest as much as possible.

The collection of litter has been regulated in this wise: It must not be exercised in young woods which have not yet attained half the age prescribed by the term of rotation;* further, an area where litter has been collected, must have at least six years' rest before it is again opened for that purpose, and lastly, the areas open for the collection of litter must be assigned annually by the responsible forest-officers, and this is done in accordance with a well-considered plan. Nevertheless, the quantity of leaves removed annually is enormous. In spring and autumn long strings of wagons filled with huge mountains of litter leave the forest in every direction, and the result is that the soil does not improve as much as it might, and in places it is much impoverished.

The state forests in this part of Bavaria are also burdened with the right to dry wood, which may be exercised twice a week by the neighboring villages. May, June and July are excepted, and on the first open day in August, long be-

fore daybreak, thousands of carts and wagons enter the forest from all sides to fetch the dry wood, which is much prized, not as fuel only, but also for agricultural implements, etc. The forest is alive with men, women and children collecting what is on the ground and cutting dry standing trees. On those days the foresters have their hands full in guarding against injury to green trees. All dry wood down to three and a half inches diameter belongs to the right-holders, who may use the dry wood removed by them, but may not sell it.

Dry wood, such as is removed by right-holders, is the outcome of overtopped and suppressed trees. Naturally, these are most numerous in crowded woods, whereas they are scarce in forests subjected from an early age to a regular system of periodical thinnings. Hence the rule has been laid down, in order not to curtail the supply of dry wood to right-holders, that no thinnings shall be made until the woods have attained half the age which they are destined to attain.

Another forest-right, but of less moment, is pannage, or the right which the inhabitants of certain villages have to feed swine upon the Beech and Oak mast within the forest. The exercise of this right, however, is suspended on the occurrence of a good Oak mast from October to January. During that period the pannage is sold to the highest bidder, payment being generally made by the delivery of acorns collected in the forest, to be used for the extensive plantations of Oak made annually by the forest-officers.

Bonn, Germany.

D. Brandis.

Recent Publications.

According to Season. By Mrs. William Starr Dana. Charles Scribner's Sons, New York. 1894.

This little volume is a reprint of letters contributed last summer to the New York *Tribune*. As the sub-title indicates, the letters are simply "talks about the flowers in the order of their appearance in the woods and fields." The aim of this book, like that of its predecessor, *How to Know the Wild Flowers*, is to stimulate among the indifferent an observant love of nature and to open for them a primrose way to the rich treasures of the botanical world. The record begins with the flowers of April, and closes with the "surprises" of the autumn. The scientific method is carefully avoided, as well as the use of botanical names and terms. The flowers are classified according to season, and incidentally according to locality, with the avowed design of enabling the reader "to start upon each tour of discovery with a clear notion of what he is to find." But the directions given for finding the flowers are too vague to awaken the curiosity of the indolent reader, and the information concerning them too desultory to satisfy the zest of the eager one.

It is interesting to note how far apart lies the world of the farmer from that of the amateur botanist. Mrs. Dana writes of the *Trifolium incarnatum* as so rare a flower in this country that, having found a group of them in a Connecticut farm-yard, she learned their name only by accident in an account of a country walk in England, written by John Burroughs. Every intelligent farmer knows that for several years past the agricultural papers have been discussing the possibility of introducing this variety of Clover into this country, and that it has been cultivated successfully in all of the middle Atlantic states. But to the botanist it is still so great a stranger as to awaken curiosity and interest. Though the book may fail in its primary purpose, it will still find readers, for the essays, though slight in substance, are gracefully written; and to the dwellers in the town whose childhood was spent in the country, these simple little talks will serve to recall the long-vanished "splendor in the grass and the glory in the flower." For Mrs. Dana, in her descriptions of her favorite woodland beauties, seems often to have caught the very spirit of the flowers, their fragrance and their grace, and there are now and then touches of true poetic feeling. Who does not share her childish conviction "that one could

* The term of rotation prescribed for Oak is 300, for Beech 120, for Scotch Pine 96, and for Spruce 72 years.

recognize Sunday by the peculiarly golden look of its sunlight, and by the long, still slant of its shadows in the orchard"? In looking back upon the past, it seems that, in spite of its restraints and tedium, something of the sacredness of that Puritan Sabbath had stolen into childish hearts, and consecrated even the commonest surroundings with "the light that never was on sea or land."

Notes.

Azalea mollis is the earliest of the hardy foreign Azaleas to flower in this country, and, like some of the plants of its class, does better in partial shade, where the flowers persist longer than in the full sunlight.

After all the wealth of May bloom no flowers are sweeter in the garden now than Lilies-of-the-valley. It does not seem to be generally known that the odor of this flower is only second in popularity to that of the Violet, and under other names for the Lily-of-the-valley the perfumer distributes about as much of the one as of the other.

Good pink flowers are always scarce, and this gives an exceptional value to *Rhododendron Vaseyi*, which has been covered with flowers of the most distinctly dainty pink. The plant, too, is absolutely hardy, and it begins to bloom when it is hardly more than a foot high, and has the advantage of flowering earlier than any American Azalea.

As a rule, the double-flowered Lilacs are less beautiful and desirable than those with single flowers, but, on account of the peculiar color of its flowers, an exception to this rule will be made by many people in the case of *Syringa Verginité*, a delightful plant with great clusters of large semi-double, pale-rose or flesh-colored flowers. This is certainly one of the most distinct and attractive of all Lilacs.

The nave of the church at Greenstead, or Greenstead-Ongar, one of the most ancient churches of Britain, is extremely curious, being composed of the half-trunks of Oaks, set upright and close to one another. The trunks, about one and a half feet in diameter, have been split through the centre and roughly hewn at each end to let them into a sill at the bottom and into a plank at the top, where they are fastened by wooden pegs. The nave is twenty-nine feet nine inches long by fourteen feet wide, and is believed to have been erected about 1013 as a shrine for the reception of the body of St. Edmund, king and martyr.

An interesting hybrid of *Spiræa Thunbergii* with another hybrid has been called *Spiræa arguta* by Dr. H. Zabel of the Forest School at Münden, in Hanover. A plant received from this establishment flowered profusely in the Arnold Arboretum, and was in finest bloom the first week in May. It promises to be a valuable addition to the earlier-flowering kinds. The branches are slender and gracefully recurved, and are thickly covered with sessile umbels of flowers, as in *S. Thunbergii*, but the foliage is not so interesting inasmuch as the leaves are shorter, broader, less abundant and do not assume bright autumnal colors.

The origin of the name "Excelsior" as applied to wood-shavings used to stuff furniture must have puzzled many people. According to the *American Cabinet-Maker*, in 1860 the representative of a factory in Maine, where this material was first made, showed samples of it to Manning, Glover & Company, dealers in bedding and upholstery supplies in Boston. A member of the firm, becoming impressed with the possible value of the article, asked what it was called. It had no name. The evening previous Mr. Glover, having attended a concert where he had heard Longfellow's poem, "Excelsior," recited for the first time, exclaimed, "We will call it Excelsior," and by that name it has been known ever since. Excelsior was first made of poplar, and during the war sold as high as \$120 a ton. Now all kinds of soft wood are cut up into this material, which is selling at \$15 a ton.

The May 1st issue of *Le Journal des Orchidées* is devoted to a list of all the described Cypripediums, including natural species and those obtained artificially in cultivation, prepared by Monsieur Otto Ballif. In 1839 the Loddiges, of Hackney, the principal nurserymen of their time, included three species of Cypripedium in their catalogue—*C. insigne*, *C. purpuratum* and *C. venustum*. Ten years later eleven species were found in their catalogue. In 1861 the Consul Schiller, who possessed, at Hamburg, one of the richest collections of exotic plants in existence at that time, mentions nineteen species in his cata-

logue. As early as 1857, however, John Dominy, a foreman in Veitch's nursery, had crossed *C. barbatum* and *C. villosum*, the offspring, the first artificially obtained Cypripedium, named *C. Harrisianum*, flowering in 1869. It was not, however, until about 1880 that lovers of Orchids became particularly interested in Cypripediums; and in 1887 Monsieur Ballif was able to enumerate in the *Moniteur d'Horticulture* nearly 350 species and forms. In the present list he enumerates no less than 1,100 forms, although, as different names have been given by different raisers to hybrids of the same parentage, it certainly contains numerous duplicates.

The first *Spiræa* to produce flowers in spring, as well as one of the foremost in point of beauty and general ornamental value, is *Spiræa Thunbergii*. This is one of the species more recently introduced from Japan, but is rapidly winning popularity and becoming common. It is one of the few shrubs which maintain an attractive or even beautiful appearance from the month of May until November. In this climate it is usual to find a good many of the snow-white blossoms expanded in the last week of April, the fullest and best bloom appearing in the first and second week of May. After this the plants become densely covered with small, narrow, willow-like foliage which maintains a clean, pleasant green color throughout the summer; and in the autumn changes to brilliant orange and scarlet colors, and as the leaves persist until quite late, this little shrub remains showy long after most others have become leafless. The branches are very slender, which gives the plants a graceful, drooping aspect, but, although the stems at first appear slight and weak, they become stouter annually until the plant may be five or six feet high. Although the flowers are small, they are produced in such great profusion that the whole plant seems a mass of white.

The fragrant Wild Crab, *Pyrus coronaria*, should not be forgotten by those who wish to introduce beautiful plants into their grounds. Less showy, perhaps, when in flower than some other Apple-trees because it does not bloom until the leaves are large enough to partly conceal the flowers, the Wild Crab has the great merit of flowering later than any other Apple-tree. The flowers, which are sometimes nearly two inches across when fully expanded, are white or rose-color and emit a delicate and delightful penetrating fragrance. The beauty of the green waxy fruit, as it hangs on its slender graceful stems, is also very great. *P. coronaria*, which, under favorable conditions, attains a height of twenty-five to thirty feet, is a native of forest-glades in the region south of the Great Lakes and among the Alleghany Mountains, and is everywhere perfectly hardy. Planted along the margins of a natural wood it appears to advantage; and when allowed to grow without the influence of other trees it forms a shapely round head of stout rigid branches. Formerly the Wild Crab was a good deal used as an ornamental plant in the middle states, where it was planted, also, on account of the excellent jams and cider that can be made from the fruit, but of late years it has been too much neglected for foreign species—all very beautiful plants, although they do not possess the peculiarities which make the Wild Crab valuable.

Cherries are now coming from Maryland, and gooseberries and blackberries from Georgia. Other fruits seen in some of the fancy-fruit stores are hot-house nectarines from Connecticut, which sell for a dollar each, and new limes from Jamaica. A few boxes of California apricots reached this city by express last week, but the fruit was small and unattractive. Selected Bidwell and Honey Dew peaches from Florida bring forty to fifty cents a dozen; these varieties and Peen-to peaches are plentiful enough to be offered on the street fruit-stands at much lower prices for the lower grades. Strawberries have been plentiful and of fairly good quality, notwithstanding the persistent rains of last week, and large berries from Maryland, Delaware and southern New Jersey were offered in the retail markets on Saturday at ten and fifteen cents a quart box. The stock of Florida oranges held in cold-storage by New York dealers is now closed out, and, except a few boxes of this fruit which have been kept back by Florida shippers until now, the season for these oranges is ended. Bright-colored Florida oranges of good quality have recently commanded fancy prices, but the russets came into competition with the large stock of Mediterranean oranges, and these have both sold at low prices. The first Rodi oranges of this season, a famous summer orange from the Mediterranean, were quickly bought up at the wholesale auction on Monday. According to the *Journal of Commerce* 326,860 boxes and 11,066 cases of oranges, and 1,063,761 boxes of lemons have been imported into New York since the first of last September.

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Playgrounds and Parks.

A CITY officer in Philadelphia is quoted as having recently said, in some public manner, "It would be better to have more playgrounds for growing boys and girls and fewer ornamental parks. The city owns the old Athletic Baseball Ground, and all we have done to it is to erect a fence around it and cut two diagonal paths across it. It is spacious, and makes an admirable playground. Here the boys and girls roll their hoops, play ball and engage in all sorts of harmless and healthful pastimes, and the people living in the vicinity think it is one of the best features of that section of the city. It would, in my judgment, be a first-rate idea to establish places like this in all parts of the city. They do not cost anything like so much as public parks or squares, and they are of more use."

In citing these ideas, the *Evening Post*, of this city, remarks that they might well "be acted upon also in other cities"; and we have no doubt that, if read without reflection, they may seem sensible to many well-meaning men and women. But it is always an unfortunate mode of argument to exalt one useful thing by depreciating another, and its employment in this case proves a fact upon which we have commented before. It proves that, while our people recognize the utility of those types of public grounds which are called "ornamental," they do not rate this utility at its proper value, or really understand those human needs, urban conditions and natural facts upon which it is chiefly based. As a rule, they think that small ornamental public grounds are useful as increasing the city's beauty, helping to purify its atmosphere and giving people a chance to sit down when they are tired. They look upon Central Park simply as a place where rich people may drive to "take the air" and see their friends; where exercise on foot or in the saddle may be had; where poor people may escape from the confinement of stuffy shops and homes, and where special places for special kinds of "recreation" may be provided. But in thinking thus they miss that real meaning of the word recreation which appears if it is written re-creation. No mere playground can serve the purpose of recreation in this truer, broader sense—the purpose of

refreshment, of renewal of life and strength for body and soul alike.

The truest value of public pleasure-grounds for large cities is in the rest they give to eyes and mind, to heart and soul, through the soothing charm, the fresh and inspiring influence, the impersonal, unexciting pleasure which nothing but the works of Nature offer to man. A single fine tree, a small patch of green grass, a house-front gracefully draped with vines can exert this influence in a humble degree. A larger association of trees and grass and flowers, even if inartistically disposed, can exert it more powerfully upon eyes which, through long-continued denials, have ceased to be captious with regard to natural beauty. But when Art comes to Nature's help, in those urban places where Nature by herself is powerless to produce real beauty, then only is the full result attained; for then only are the charms of individual objects so disposed that they can have their full effect upon eye and mind.

Not much art was shown, for instance, when Bryant Park, in this city, was laid out. It consists chiefly of small stretches of turf and of rows of Silver Maples monotonously disposed. Nevertheless, if we could not have this park just where it lies and, in addition, have an open unshaded expanse prepared especially for children's active sports, we are better off with this park alone than with the playground alone. Some latitude for children's sports it affords; hundreds of babies, accompanied by tired women or children, daily sleep or prattle beneath its trees—babies who need fresh air and sunshine quite as much as their elder sisters and brothers, and are not provided for at all in a typical playground. And to every class of adults, in search of a refreshing hour, it offers cheering hospitality, while a mere glimpse of its greenness is a distinct refreshment to the thousands of weary toilers who daily pass it on the elevated railroad.

Madison Square is a prettier place than this—a more distinctly ornamental pleasure-ground. Look at it just now, at any hour of the day, filled in every corner with people who could not use an actual playground, and see whether you think any spot on earth can be more useful. People sometimes say that Washington Square is simply a resort for tramps. This is an exaggeration; for, lying close to some of the most crowded and reeking streets of the city, it attracts numbers of very poor people who may be unemployed for the time, but are not tramps in the opprobrious sense of the word. Moreover, any place which keeps even professional vagabonds from the crowded streets and bar-rooms is of distinct benefit to them and to the city as a whole. Jeanette Park is another place whose orderly plantations and bright flowers we may think of wider and deeper utility than, in such a locality, even a children's playground would be.

The beauty of all such spots is their most valuable element. Fresh air and sunshine and shade are precious in themselves, merely through their direct effects upon the body. But they are doubly precious when that sense of beauty is appealed to which is innate in every human soul, even in those that are most deeply degraded and are least definitely conscious of its possession. City children, deprived of the pleasure which natural beauty can give, are grievously defrauded of their rights, no matter how many spacious but barren playgrounds may be provided for them. Nor should the value of ornamental parks simply as additions to the city's beauty be underrated; for anything which adds to the attachment that child or adult feels for his place of residence tends to make him a better citizen. Parisians are notoriously more passionately attached to their city than any other people. Can we doubt that this is not merely because Paris is the most interesting and amusing of modern towns in so far as its human elements are concerned, but also because it is the most beautiful of modern towns? And in the production of this beauty architectural art has not played a more prominent or important rôle than gardening art.

We have pleaded in these columns for more children's

playgrounds too often to be accused of not recognizing their value to the community. But they should not be asked for, or wished for, at the expense of ornamental public grounds of any kind. Even from the physical point of view the latter serve the needs of larger numbers of people, and from the mental, spiritual point of view they are absolutely indispensable. They, and they alone, can supply urban populations with that kind and degree of beauty which is needed for their physical, mental and moral refreshment and inspiration.

THE newspapers lately contained an account of a lawsuit which has interest for every one who believes that the owner of a tree has a right to complain when it is recklessly mutilated. The employees of a telephone company were stretching wires along the road which skirts the property of Mr. George W. Hawkins, near Newburg, in this state, and in doing so they disfigured half a dozen Spruce-trees, which had been planted by his father, by cutting off the branches. No consent to this mutilation had been given by the owner of the trees, and the linemen, as usual, had used their saws and axes without mercy. Mr. Hawkins sued the company for \$600, estimating the damages at \$100 a tree. The jury gave a verdict of \$500. Under provisions of the code in this state, Mr. Hawkins' lawyers then moved that a triple judgment be made, and the court astounded the defendants by granting this and increased the judgment to \$1,500. It is to be hoped that the higher courts will confirm this judgment and hold that a growing tree has a value beyond the mere amount of timber it contains, and that the owner has a right to watch its growth and enjoy its beauty, and to derive pleasure from its associations. The courts should take into account that a tree cannot be replaced in many years, and the wanton destruction of such property ought to call for exemplary damages. Ever since the country was settled we have been learning how to cut down trees, but it is high time that we learn the real value of those which have escaped and stand where they can delight us by their beauty and refresh us with their shade. The decision of this Orange county judge is a wholesome one, and such decisions are needed to teach the linemen of telephone and telegraph companies a lesson which will make them more cautious about invading private rights.

Some Old Town yards.

LAST summer, at the Columbian Exposition, in passing through Horticultural Hall, my attention was attracted in the Idaho section by three jars of fruit that, although in the midst of dozens of other jars, gave me a curious feeling of having seen the fruit before. But where? One jar was filled with beautiful yellow plums, a second with even more beautiful purple ones, and the third was labeled "Susquehanna peaches." Several times I went quite out of my way to look at them, but it was not until the Fair had become a thing of the past that the mystery was cleared up.

One day, in passing through what is now a closely built portion of this city, a vision rose in my mind, and I knew that I had long ago seen the same kinds of fruit in an old-fashioned town-yard, hidden from the street by the brick house, which, like its neighbors, was built out even with the sidewalk, and separated from the adjoining yards by high board fences, half-covered with climbing Roses, Snow-berry and Kenea bushes. Against the rear wall of the house Apricot-trees were trained, and an arbor, covered by Catawba and Isabella Grape-vines, shaded the brick walk, where pigeons were always fluttering back and forth from the pathway to their cotes at the end of the long narrow yard. Between the arbor and side-fences were several fruit-trees, but the ever-to-be-remembered ones, the champions, were two Plum-trees which bore big oval plums, one a golden, the other a purple Egg, the most beautiful and perfect specimens of their kind. In the flickering

shade of the trees a kind old grandfather moved, armed with a wonderful machine to hook off the fruit for the expectant children surrounding him.

The peaches grew in another yard, one whose like it would be hard to find nowadays within the borders of a city. From the house one entered first a little flower-garden, and then passed through a gate into the yard proper, guarded at the entrance by a tall Pear (*Beurré d'Oieul*), whose spire rose high above the other trees, though it was hard pressed by a rival Pear-tree in another corner, a *Beurré Bosc*. Here were also Plums, Apricots and Peaches, and though there were other kinds, from a very early sort to the late Morris White, nothing could approach the perfection of the great Griffith peaches.

Beyond this yard, which one was never willing to leave, was still another, the precinct sacred to the new or rare fruits. The side-fences formed a background for what were then both new and rare—white and red currants, raspberries and giant gooseberries. At the far end were the grape trellises, of which as a child I highly disapproved, because there was "no nice shade." I must have asked something about this abnormal state of affairs—every one else had arbors—for one day I remember this grandfather saying, "You can't have shade and grapes too," and thereupon gave me a bunch of grapes from a vine that he called by what I then thought the very funny name of "Rogers No. 4." There were more Peach-trees here and Cherries, and a Belle Lucratif Pear; and there was a Nectarine, dear to us from some story-book association, but we really cared for nothing else as we did for the great luscious peaches that finally were lost to us and became only a memory, until I found their double at the Fair in the Susquehanna peaches from Idaho.

Nowadays grandfathers with pastoral tastes spend some of their Sundays and a great deal of their money on "places" that vary in extent from little suburban lots to grounds calling for a troop of men to keep them in order. But I doubt if they enjoy these as much as did the grandfathers of the ante-war period, who grafted and pruned their own fruit, and spent long hours on their front door-steps discussing with their like-minded neighbors the latest number of the *Country Gentleman*.

Harrisburg, Pa.

M. L. Dock.

Botanical Notes from Texas.—XIX.

UVALDE is a little city in the wilderness of Texas, about ninety miles west of San Antonio. It is the capital of a county of the same name. Their eponymist was the Mexican General Uvalde, who long ago won a decisive battle over the Comanche Indians in the cañon north-west of the city.

Near the city the Leona River has its principal sources in numerous springs issuing from its banks, soon becoming a large stream. A few miles below, the waters of the river are utilized for irrigating purposes, for Uvalde County is west of the limit of profitable agriculture without irrigation. About a mile above the city, at the foot of the Leona cañon, is a nearly broken-down cataract, over which the waters of a larger river once plunged. At the base of the old falls is a large pool of permanent water, filling the cavity washed out by the cataract. Uvaldians call it "the lake."

In a pleasant Elm-grove two miles or so below the city are the slight ruins of Fort Inge, which was built by the United States Government soon after the Mexican war, to afford the settlers of this region protection from Indian depredations. Near the ruins of the fort is a huge natural pile of rocks, known locally as "Fort Inge Mountain." The hill, which appears to be one of circumdenudation, is probably one hundred feet or more high above the level of the river. It may be a mile in circumference at the base. From its summit the surface geology of the country for miles around may be seen. The hill appears to be the highest point of a range, now nearly washed down, that once dammed the river at this point. The deposits of the large lake thus formed constitute the soil of the rich valley through which the Leona River now winds, and which needs only a greater rainfall or irrigation to make it a garden.

Uvalde County is the great honey-producing county of Texas, and its rocky places, where bees deposited their homes in

crevices, have sometimes literally flowed with honey. Our domestic bees have always moved westward just in advance of civilization, so that the Indians have a proverb, "When the bees come, the wise Indian moves on." There are several large "bee ranches" in this county, and one company manages nearly a thousand colonies. In the honey season of 1891 seven hundred colonies of bees collected 70,000 pounds of honey for their owners. Except at the time for dividing the colonies, the bees need little attention. The principal honey-yielding plants of this vicinity, blossoming in early spring, are species of *Acacia*, *Mimosa* and *Pithecolobium*. Other early-flowering shrubs, like *Rhus microphylla*, "*Correosa*," furnish abundance of pollen for the subsistence of the young bees in February or earlier, so that the old bees have their broods reared and all things in readiness to begin the work of collecting honey as soon as the plants begin to manufacture and store the nectar for them. In the height of the honey season a single household of bees will sometimes collect a hundred pounds of honey in two weeks. We now know that plants are the honey-producers, each plant manufacturing its own peculiar quality of honey, so that there may be as many grades as there are plants that produce it. White Clover-plants and Basswood-trees yield honey of light color and of exquisite flavor. Buckwheat and many other plants give a dark-colored honey, less pleasant to the taste. It is said that honey afforded by species of the Cactus family is always more or less acid. Many Composite plants give an unpalatable and bitter flavor, and their increased distribution in cultivated fields has nearly driven bee-farming out of the region where they grow.

The Leona River affords, in its ever-flowing waters and along its moist banks, an abundant flora whose species require constant presence of water, while the uplands around present the usual desert plants of the region already passed over, with the addition of a few more western species, Uvalde being the most western point from which these notes have been written. In some places along the river valley, where the roots of the trees and shrubs in their downward growth can reach perpetually moist soil, Live Oaks, Elms and other species attain nearly as large a size as they do anywhere in the state. A walk down the river revealed the presence of *Bœhmeria cylindrica*, four to six feet tall; plants of *Helianthus Maximilianus* ten feet high, and two or three handsome *Asters* bending their flower-laden branches over the river to catch the rising vapor before the dry air absorbed it. Tall, wand-like stems of *Lobelia splendens* stood near by, but their glory for the season had departed. This species is to south-western creek banks and springy places what *L. cardinalis* is farther north to similar localities. It is taller than its cousin, but not less handsome. In a still nook of the river the water is completely hid by a mantle of innumerable individuals of little *Spirodela polyrrhiza*. Close by is a little Bladderwort, *Utricularia biflora*, in flower, while in the rapids some *Potamogeton*, a true river lover, delights to swim. The low-spreading, small-flowered composite, *Synedrella vialis*, is common on grassy river-bars and in dunal pastures. It is abundant along the Leona and throughout south-western Texas.

In drier places the western *Euphorbia barbellata* is abundant. *Passiflora affinis* is common along the Leona, climbing twenty feet or more. It is a south-western species, closely resembling *P. lutea* in habit, but with still smaller black fruit. The oak-leaved *Stramonium*, *Datura quercifolia*, grows in the streets of Uvalde. In richer and damper soils around the city *D. metaloides* is more commonly met than at any other place in Texas, as I have observed it. The large sweet-smelling flower that it produces has led to its cultivation in gardens both south and north. It is wild in Missouri to nearly the thirty-ninth parallel. A coarse, viscid-hairy, malodorous *Abutilon* abounds in cultivated lands over this portion of Texas, and farmers complain that its large strong roots impede the progress of their plows. On dry banks of the river, and commonly in southern Texas, *Indigofera Lindheimeriana* is to be seen. It is very distinct from our other Texas species of the genus, and makes an erect and nearly woody stem, becoming two to four feet tall. The numerous reddish flowers are borne on erect spikes; its pods turn downward and become bow-shaped as they ripen.

Near the base of Fort Inge Mountain, *Perezia uncinata* grows. It is a stemless plant, with handsome purple flowers, which makes it the most attractive of our Texas *Perezias*. Its specific name well describes its leaves. *Ephedra pedunculata*, a weak, straggling shrub, hardly able to stand without help, is not uncommon about the city. Perhaps it would be well to call it a vine; except in its climbing propensities it hardly differs from *E. antisiphilitica*, as I have seen it. The fruit is barely pedunculate. Texans call it Bamboo, and it is the *Escobias* of Mex-

icans. As browsing animals are very fond of both species, it is a stroke of good luck if one finds a specimen of either species in flower or in fruit, unless in ungrazed enclosures.

The Nueces River, whose wide bed is now dry and dusty, is about six miles distant from Uvalde. The common Castor-oil plant, *Ricinus communis*, grows as a weed on its dry bed. In extreme southern Texas this plant becomes perennial and woody, really a tree. In damp places along the railway *Perezia Wrightii* is abundant. This species has succeeded in making itself so different from its Texas congeners that it is more difficult to learn that it is indeed a *Perezia* than, when that fact is established, to distinguish it from its congeners. It is a tall, usually strict-growing species, and very leafy to the flower-heads. The leaves are commonly oblong-ovate and clasping at the base. They are not at all runcinate, but are so spinosely and unequally dentate that a transition to a runcinate character could easily be made, if at any time this plant should deem fit to differentiate a runcinately leaved species from itself. Its flowers are white. Overtaking *Perezia Wrightii* at Uvalde, so much farther eastward than we had expected to meet it, we have now had an introduction, though in a rather sudden and informal way, to all known Texas representatives of *Perezia* agenus, which, with *Gochmatia*, *Chaptalia* and *Trixis*, also Texas genera, belong to the wholly southern series of *Labiatifloræ* in *Compositæ*, distinguished by the bilabiate, or divided corollas of the flowers of its species, plants which northern botanists at home never see.

Abounding on the gravelly bars of the Nueces River is a rosaceous plant known to botanists as *Fallugia paradoxa*. Its pinnate leaves, with several pairs of leaflets, white flowers closely like those of our common Blackberry, and its persistent styles, which greatly elongate as the fruits ripen, becoming feathery and of a purplish hue, give to the species a habit by which it may readily be known. Handsome in foliage, flowers and fruit, it is really a likable little shrub and worthy of a place in every southern garden. In walking along a public road on my way to the Leona, I noticed a half-starved but handsome plant growing by the way-side. Dry weather had so dwarfed it that it was hardly recognizable, but a closer look showed it to be *Eupatorium Greggii*. Its rather large blue flower-clusters are pretty, and its lobed leaves, with their divisions variously cut, make the plant unique among our species of *Eupatorium*. It would adorn any garden where it will grow.

Fort Inge Mountain, in a rainy season, is good botanizing ground, especially for handsome south-western Ferns. But they nearly all have succumbed to the dry weather. Only *Pellaea flexuosa* and a *Cheilanthes* were in a condition to be recognized. There are several other species of plants around Uvalde that may be new or rare to some of us, and others are here that we are glad to meet so far westward, but mention of these must be deferred.

Uvalde, Tex.

E. N. Plank.

Foreign Correspondence.

London Letter.

RICHARDIA PENTLANDII.—Some time ago I hinted that tubers of this beautiful yellow *Richardia* had been received at Kew from Africa. One of the plants raised from them is now in flower and proves to be identical with the plant flowered at Pentland House by Mr. Whyte in 1892, and since exhibited by him to the admiration of every one who knows a good garden-plant when he sees it. The spathes are as large as those of the common *Arum Lily*, *R. Africana*, and of the richest, clearest yellow color, the yellow of the common Sunflower. Mr. Whyte did not know the history of his plant beyond that it had been given to him by a friend. The history of the Kew plants is, briefly: In 1891 Mr. Galpin, of South Africa, brought to Kew the tubers of a yellow *Richardia* which had been presented to him by a gentleman living in the Transvaal, who obtained them from a soldier who got them from a Basuto chief while on active service. A figure of the Kew plant has been prepared for the *Botanical Magazine*.

LILACS have been finer out-of-doors this year than I ever remember to have seen them. There are many beautiful varieties now, most of which have been bred by Continental nurserymen, especially Monsieur Lemoine, of Nancy. Last week two of the new ones were shown at the meeting of the Royal Horticultural Society, where they were gener-

ally admired and were awarded certificates. They were Madame Lemoine, a double white variety of extraordinary vigor and purity, the trusses suggesting well-grown stocks. The other was named Louis Späth. This has large single flowers of good substance, and packed in very large trusses, the color being rich blue-purple with a suggestion of deep crimson in the buds. It is by far the finest of the dark varieties of Lilac hitherto raised. It was exhibited by Mr. A. Waterer, of Knap Hill, who thinks very highly of it.

TULIPS.—A gorgeous display of color has prevailed this spring on several of the most conspicuous lawns and walks at Kew, in large beds full of such brilliant sorts of Tulips as *Tulipa elegans*, *Picotee*, *macrospheila*, *fulgens*, *Gesneriana* and *Darwin*. The value of large masses of color, such as these make in May, is exceptional when they are placed in positions where they tell with good effect. The use of Tulips, Daffodils, Crocuses, Bluebells (*Scilla*), Snowdrops and such-like easily managed, free-flowering, effective spring-flowering bulbs is much more general in good gardens in this country than it used to be. Their value is, no doubt, due in some measure to the fact that they come with a rush and do not stay too long. The pleasures of the garden are greatly enhanced, in my opinion, by following what may be called a kaleidoscopic system of grouping.

TACCA CRISTATA is a handsome stove-plant, which is rarely seen or heard of outside botanical gardens. A good specimen of it is now in flower in a stove at Kew, where its extraordinary looking heads are a source of much speculation on the part of visitors. From a fleshy root-stock spring long-stalked, lanceolate, dark green and purple leaves, not unlike those of *Eucharis*, but larger and more lanceolate. The scapes are nearly two feet long, and each one is terminated by a cluster of small roundish flowers and long filaments, springing from the base of four large conspicuous spathe-like bracts. The flowers last about a fortnight. Grown in a hot moist atmosphere, and potted in a rich open soil, this plant soon forms a handsome specimen. I have seen one with over twenty large flower-heads. It is a native of Malaya. Another name for it is *Ataccia cristata*. The order *Taccaceæ* is closely allied to the *Amaryllids*.

GLOXINERA BRILLIANT.—Under this name Messrs. J. Veitch & Sons exhibited last week a plant which they had raised by crossing *Gesnera pyramidalis* with a *Gloxinia* called *Radiance*, and claim that it is a bigeneric hybrid. The plant itself is like an ordinary *Gloxinia*, with somewhat shorter leaves with a metallic hue, and tubular rose and scarlet flowers set horizontally and singly on stalks. Before we can be certain of its parentage, or even of the value of the generic name given to this plant, we must know whether its parents are what they are called. The *Gloxinia* of gardens is not a *Gloxinia* at all, but a *Sinningia*, namely, *S. speciosa*. There is no such species as *Gesnera pyramidalis*, and many of the plants called *Gesneras* in gardens belong to other genera. The whole order as represented in cultivation is in such a state of confusion that we may well hesitate before adding to it by creating another name.

CYPRIPEDIUM MACROCHILUM GIGANTEUM.—This is a handsome hybrid which Messrs. J. Veitch & Sons have raised from *C. grande* and *C. caudatum* Lindeni, and to which the Royal Horticultural Society have awarded a first-class certificate. Its leaves are as fine as those of *C. grande*, and the flowers are as large, but they have the long tail-like petals of *C. caudatum* and an immense labellum. Their color is green, with a tinge of rose on the petals, the lip white inside, with a spotted margin, the outside of the pouch being white and green, suffused with crimson. *C. macrochilum* was raised by the same firm in 1891 from *C. longifolium* and *C. caudatum* Lindeni; this new variety is superior from the fact that *C. grande*, one of the handsomest of the *Selenipedium* hybrids, has been used instead of *C. longifolium*, a somewhat weedy species.

DISA LANGLEYENSIS is a new hybrid of Veitchian origin, its

parents being *D. racemosa* and *D. tripetaloides*. It was shown in flower last week, and obtained a first-class certificate. The flowers are intermediate in size, and their color is rosy lilac, with veins of a deeper shade and a few red spots. There were about a dozen flowers on each scape, and the whole plant bore an attractive, healthy look which augurs well for its future as a garden Orchid. The *Disas* of this section are rapidly coming to the front; they are not only exceptionally easy to grow, and require no artificial heat, but they flower freely and the flowers are handsome and lasting.

MICROSTYLIS SCOTTII has been introduced in quantity lately from Penang. It was shown last week, and obtained a certificate on account of the rich metallic brown and yellow of its foliage. There are several large panfuls of it at Kew, where it has been cultivated several years.

CORYANTHES WOLFFII, described by Lehmann some years ago, was first flowered by Mr. Moore at Glasnevin last year, who sent it in flower to the last meeting of the Royal Horticultural Society, where a certificate was awarded it. It differs from all other species of this remarkable genus in having the helmet-like lip almost solid instead of hollow, as is usual. The flowers are large, orange-colored, with brownish spots, and they are as attractive in their queer shape as in color and fragrance. The flowering of *Coryanthes* in this country is not of frequent occurrence. Newly imported plants of a new species of *Coryanthes* were sold by auction last week, the venders being Messrs. F. Sander & Co. The picture of the flowers, exhibited at the same time, represents it as being truly wonderful in the form, size and colors of its flowers. Collectors, however, are not always good artists.

SOME "RARE" ORCHIDS.—The tricks of venders and collectors of Orchids in the direction of bulling the market have been exposed lately by the arrival of enormous quantities of the same sorts as were a short time ago declared to be cleared out by the first collector. I am afraid to say how many thousands of newly imported plants of *Cypripedium Charlesworthii* and *Cattleya labiata vera* I have seen lately in English nurseries. Recently, too, I heard of the arrival of a consignment of plants of *Eulophiella Elizabethæ*, notwithstanding the statement published some time ago that no more plants of it could possibly be had. Possibly these statements are believed to be true when made by those who make them; still, they are decidedly misleading and calculated to bring the trade into disrepute. Experienced buyers are not easily deceived, but, no doubt, many of the younger ones are imposed upon by false and misleading statements.

London.

W. Watson.

Plant Notes.

Pyrus betulifolia.

THIS handsome hardy tree was raised here from seed collected in the mountains of northern China and sent in 1882 by the Russian botanist, Bretschneider, to the Arnold Arboretum. It was first made known* by Bunge, a German botanist who, in 1831, accompanied the Russian commission which traveled overland from St. Petersburg to Peking. Decaisne figured the leaves and young fruit in the first volume of the *Jardin Fruitier du Muséum*, published in 1871-72; and in 1879 it was figured and described by Carrière in the *Revue Horticole* from specimens probably produced in the *Jardin des Plantes*.†

Pyrus betulifolia (see figure on page 225 of this issue), as it now appears in Massachusetts gardens, is a tree fifteen to eighteen feet high, with a short, well formed trunk covered with dark, slightly furrowed, scaly bark, and a head of slender, graceful, spreading, more or less pendulous, branches which sweep the ground in a circle fully forty feet in circumference. The young branchlets, when they first

* *Unum. Pl. Chin. Bor.*, 27.—Walpers, *Rep.* ii., 53.—Maximowicz, *Mél. Biol.*, ix., 169.

† *Rev. Hort.*, 1879, 318, t. 68, 69.

appear, are coated with hoary tomentum, which clothes the under surface of the unfolding leaves, their petioles and the stalks and branches of the inflorescence. The leaves are broadly ovate, coarsely glandular-serrate, nar-

above, coated with pale tomentum below, an inch and a half to two inches long and about an inch wide, with slender petioles an inch and a half to two inches in length; in the autumn they fall without



Fig. 39.—*Pyrus betulifolia*.—See page 224.

rowed into long apical points and rounded or abruptly wedge-shaped at the base; they are covered at first, on the upper surface, with pale, silvery hairs, and ultimately they are thick, subcoriaceous, green, very lustrous

any marked change of color. The flowers are produced in the greatest profusion in early May, when the leaves are about half-grown, on short, lateral, spur-like, branchlets in stout, many-flowered, leafy racemes, and are borne on

slender, rigid, hairy pedicels nearly an inch in length and furnished near the middle with a linear, scarious, caducous bractlet. The calyx-tube is globose, tomentose, and abruptly enlarged above into a spreading, tomentose, deciduous limb, which is five-lobed with small, remote, nearly triangular lobes coated on the inner surface with pale hairs and furnished near the apex with minute red glands. The corolla is two-thirds of an inch across when expanded, with pure white petals rounded at the apex, abruptly contracted at the base into short claws and about an eighth of an inch broad. The stamens are composed of glabrous, white, incurved filaments and bright red anthers, and are rather longer than the three spreading styles crowned with capitate stigmas. The fruit is sub-globose, marked at the apex with the scar left by the falling of the calyx-limb, russet brown, covered with small pale dots, and about a third of an inch in diameter; produced in great profusion, it ripens in October and hangs on the trees until the following spring, growing soft and black after midwinter.

In Peking, Dr. Bretschneider tells us,* *Pyrus betulifolia* is "much cultivated in gardens for its beautiful flowers, which in April appear on the tree in great profusion, and for its little brown fruit of the size of a small cherry, which is eaten by the Chinese; taste not unpleasant."

Its hardiness and rapid growth, the fact that it flowers while very young (seedling plants flowered in the Arboretum when only six years old), and the pale color of the leaves, which shimmer on their long stalks with the slightest breath of wind, make *Pyrus betulifolia* a most distinct and desirable ornamental plant in the northern states. Less showy, certainly, than the common Pear-tree when in flower, the profusion in which the flowers are produced, and their pleasant contrast of color with the young leaves, make it a most desirable addition to our shrubberies. That it may appear to its best advantage, *Pyrus betulifolia* should be planted in deep well-manured soil, and sufficient space should be given it in which to spread, without interference, its long graceful branches.

C. S. S.

Cultural Department.

Notes on Trees and Shrubs.

THE flowers of the American Red Mulberry, *Morus rubra*, are beginning to open in some of the later developed spikes, during the last days of May, two or three weeks after pollen was matured in the earliest blossoms. There is nothing conspicuous or calculated to attract attention in the flowers of Mulberries, but some peculiarities about them are interesting. They are usually described as dioecious or monoecious.

The White Mulberry, *Morus alba*, of the Orient, and now common in eastern American gardens, appears to have a tendency to bear either staminate or pistillate flowers on separate plants; but our native Red Mulberry commonly produces its sterile and fertile flowers in separate spikes more or less evenly distributed among the branches of the same tree. Sometimes a large limb will bear all male flowers and another large branch exclusively female flowers, or both kinds may appear side by side on the same branchlet. Occasionally both staminate and pistillate flowers occur in the same spike, but this appears unusual and more likely to be found on the White than on the Red Mulberry. Very often apparently perfect flowers occur, bearing stamens and well-developed stigmas and ovaries. The flowers in the spike are arranged in two broad ranks, which gives the cluster a somewhat flattened appearance. Except for its calyx lobes, which form the fleshy part of the fruit when ripe, there is nothing to be remarked about the pistillate flower of the Mulberry, the most conspicuous part of which consists of the two short recurved styles and stigmatic surfaces, similar to those seen in the allied Elm and Celtis. The staminate flower essentially consists of four stamens which are incurved in the bud. As the flower-bud arrives at the period when the blossom is ready to fully expand, the filaments lengthen so that they form four little loop-like projections, while the four anthers are still held touching each other around the centre. At perfect

maturity the anthers are suddenly released, the filaments straighten with a jerk, and the pollen is scattered from little vertical slits which are simultaneously opened in the two-celled anthers. If the filaments and anthers are disturbed when nearly mature, the act of expansion may be distinctly observed, for as soon as the anther is released the filament flies back and a little cloud of white pollen is thrown into the air.

The Red Mulberry is probably not indigenous in eastern Massachusetts, but it is frequently found in gardens and occasionally by a road-side, where it has probably escaped from cultivation. It is said to be native in the western part of the state and thence more common west and south. In cultivation here it is usually a low, broad-spreading tree with nearly horizontal branches, and at a distance, when leafless, it might be mistaken for a Hawthorn or flat-topped Apple-tree. Farther south it often attains a height of sixty or seventy feet. A specimen in these grounds, planted many years before the establishment of the Arboretum, now has a trunk more than twenty inches in diameter, which branches into three large limbs at three feet from the ground, and forms a tree twenty-five feet high, spreading over a diameter of thirty-five feet. Another tree, grown from seed collected in Virginia and sown in 1874, was permanently set out when a seedling on poor gravelly soil, which has ever since been covered with grass; it now has a stem two feet in circumference or eight inches in diameter. The trunk divides into two or three sections at three or four feet from the ground, and the tree is over twenty feet in height and spreads twenty-five feet across. The almost black fruit when fully ripe averages nearly an inch in length, and has a pleasant slightly acid flavor which is vastly more palatable than the mawkish sweet of the average fruit of the White Mulberry. The fruit of the ordinary forms of the Red Mulberry is much liked by many people, and locally it is sometimes called the Black Mulberry. This name, however, is misleading, for the true Black Mulberry, *Morus nigra*, of the Old World, is not hardy in this climate. This is unfortunate, as its fruit has been generally considered much finer and more palatable than that of any other species in general cultivation.

Several horticultural varieties of the Red Mulberry have been named by cultivators. They are chiefly grown in the south, where the Stubbs Mulberry is said to produce immense quantities of pleasant-flavored fruit fully two inches long and half an inch thick, and the Hicks Mulberry bears a large sweet fruit, valuable for fattening hogs and poultry, for which purpose it has been planted by some farmers. In this vicinity the first fruit is matured about the first week in July, and it continues to ripen during several weeks, but in the south it is said that the best varieties continue to mature an abundance of fruit for two or three months.

There are some forms of the White Mulberry which have dark-colored fruits, so that the plant has sometimes received the name of Black Mulberry. But the White and Red Mulberries are the only two species usually seen in northern gardens, and they may be readily distinguished, for the leaves of the White Mulberry are smooth and shining on both surfaces, while those of the Red Mulberry are rough above and densely covered by a soft gray pubescence or down on the lower side. The leaves of the Red Mulberry are also usually larger. In both species they are more or less heart-shaped, and the margins have blunt or rounded teeth. Vigorous growths are sometimes deeply lobed, the hollows or sinuses being large and without serrations or teeth. In the variety of the White Mulberry, known as the Tartarian or Russian, the leaves are nearly always lobed and often very much so. In this climate it is probable that the White Mulberry will always be a larger tree than the Red. Wherever a Mulberry-tree is a desideratum in a small garden the native Red Mulberry would probably give most satisfaction on account of the more palatable quality of its fruit, but if it is desired to feed silkworms, *Morus alba* should be selected. The Mulberries appear to be exempt from the attacks of many of the insect pests which affect other shade and fruit trees.

Arnold Arboretum.

J. G. Jack.

Seasonable Garden Flowers.

ONE of the earliest and best of the composite family to flower in the early summer is *Helenium Hoopesii*, a true perennial, a native of the western states from Montana to New Mexico. It is the best garden-plant of the genus, *H. Bolanderi* ranking next, and after it *H. autumnale*, a somewhat common species here in the eastern states, and a useful autumn-flowering plant.

Helenium Hoopesii is now coming into bloom, and makes

* *Botanicon Sinicum*, II., 304.

a fine show, besides being a very useful plant for cutting and for house-decoration at this season. Seeds are freely produced in favorable seasons, and the plant is also readily propagated by division of the strong root-stock. The only drawback to its cultivation is the frequent attacks of white aphids on the roots. If, as often happens, the plant looks unhappy, and an examination of the roots reveals the fact that insects are doing the mischief, it should be transplanted into fresh soil after the roots have been washed in an insecticide.

Cypripedium pubescens is in bloom again on the shady side of the *Rhododendron*-bed, where it has flowered for the past four years. It is doing better this year than ever before, in larger clumps, showing that it will increase in cultivation under proper conditions. *C. spectabile* is thrifty, also, in a similar situation. In a rich vegetable-mold, with shade and moisture, these beautiful hardy Orchids can be successfully grown in our gardens.

In the *Rhododendron*-bed the Lilies are also coming up strong. Every kind has appeared, even the newly planted *Lilium giganteum* and *L. cordifolium*; though these will not flower this year, it is gratifying to know that they have taken kindly to their new conditions. *L. auratum* *platyphyllum* was sent to me as a variety superior to the old *L. auratum* and as a Lily that would increase year after year in the garden without any special care; all of this is true and worth making known, for most of us have had vexatious experiences with *L. auratum*. Bulbs of *L. auratum* are so cheap that it consoles one somewhat for the loss of them after the first flowering, but it is still unexplained why they cannot be grown here during successive seasons as they are in Japan, and as most other kinds of Lilies are grown in this country.

South Lancaster, Mass.

E. O. Orpet.

Plants in Flower.

THE Spanish Irises now in flower form quite the most brilliantly colored group of the family, though the individual flowers are not large, and, while the plants are common, they are not nearly well enough known. If the bulbs are grown in a comparatively dry place they thrive without much care, though it is well to separate the offsets every two or three years. The leaves appear above the ground in late fall, and it is necessary to plant the bulbs early. *Iris pallida* is the stately Iris of those now in flower, the variety *Dalmatica* having the largest flowers. Well-grown plants of these Irises, with flowering stems three or even four feet high, spring from clustering, very broad, stiff, glaucous leaves, and have an air of distinction. Personally, I prefer some of the hybrids, not far removed, which have the same habit with flowers of a lighter tint of lilac. One of these, *Madame Almira*, is quite perfect in this way and has the dainty elder-like fragrance of the parent. *I. Monnieri* is characterized by another form of stateliness, with tall leaves, very slightly glaucous, yellow flowers with narrow claws, small falls and short standards. *I. graminea* is a dwarfier Iris with small flowers of a purplish red effect; it may be classed with *I. squalens* and *I. sambucina* as unattractive garden-plants. From several sources of supply I have had Irises, called *I. orientalis*, which, according to Mr. Baker's classification, is the typical *I. Sibirica*; the former name is now given to the *I. orientalis* of Miller, usually grown in gardens as *I. gigantea*. The *I. Sibirica*, var. *orientalis*, lately described, is usually known in nurseries as *I. sanguinea* and sometimes as *I. hæmatophylla*. These little confusions of the florist and the gardener enable the careless cultivator to acquire two or three collections while seeking for one. *I. Sibirica*, var. *orientalis*, is a fine variety, with rich deep blue-purple flowers, copiously veined on the claw, and with broad falls and narrow standards, both slightly frilled. The spathe valves are dark brown, and the budding flowers are handsome; it is a fine garden variety in all respects. *Iris Ciengialti*, var. *Leppio*, is taller than the type, and has dark purple flowers, with large standards and falls, and, I think, is not as pretty as the type. This is also the flowering time of our flag, *I. versicolor*, which seems equally at home in the water and in a dry border.

We have had a week of wet weather, high winds and a temperature necessitating fires in the house, yet a day or two of sunshine has removed all traces of the storm. The Oriental Poppies commenced to flaunt their great scarlet cups at once. There is considerable difference in the coloring of these flowers, and by careful selection the differences, no doubt, could be made yet more distinct. The first Oriental Poppy to appear with me is the old-rose-colored one known as *Blush Queen*, though it is in an exposed position. The first scarlet one to open has no black spots on the petals, and a small cluster of

stamens. This is a chance seedling, self-sown, and near it another rose-flowered form is opening; the ordinary forms are still in the bud. The deep coloring of the Tulip Poppy quite pales the Oriental Poppy, which usually dominates everything else in the garden at this season.

With the exception of a stray Tea Rose, the Roses of this week are all species with single or semi-double flowers, the latter being Mr. Dawson's hybrids. The Dawson Rose furnishes beautiful sprays of charming pink flowers in great clusters. The white-flowered variety has a rather stiffer habit. The fragrant single flowers of *Rosa rugosa*, the daintier flowers of the *Buriet* Rose and the delicate pink flowers of a *Polyanthus* Rose appeal to all who see them. It is always interesting to note the flowers in a garden which excite special interest and sympathy. They are often not the handsomest or the most complex, or even the rarest flowers, neither are they always familiar ones, but, like some men and women, some flowers have an occult attraction not always easy to define. With some experience, I think a garden could be arranged which would be a source of satisfying delight to almost every visitor.

Among the showier plants now in flower are the first of the hardy *Gladioli*, and *G. segetum* is showing its vivid purplish red flowers. The *Pyrethrums* are displaying their bright flowers. With these showy flowers are growing many dainty little plants, making charming mats, dotted with delightful little flowers; but these deserve more than slight mention.

Elizabeth, N. J.

J. N. Gerard.

Raising Ferns from Spores.

THE secret of success in raising Ferns from spores is to have a soil in which the spores will germinate without being overgrown with moss. As is well known, Fern-spores germinate readily on the surface of bricks and stones, where there is little or no plant-food, provided they have sufficient moisture. The best soil is obtained by baking ordinary soil over a fire. All germs of moss are thus killed, and the seedling Ferns are not in danger of being choked. In preparing pans in which to sow the spores, about two inches of broken crocks should be placed in the bottom and covered with a thin layer of moss; over this there should be about an inch of ordinary potting-soil, with half an inch of baked soil on top. After the soil is well watered the spores should be sown thinly on the surface, without any covering. Thick sowing is sure to cause damping. The pans should be plunged in a bed of sand, with gentle bottom-heat, and covered with panes of glass cut to fit them. As the moisture will condense on the inside of the glass, the panes should be turned every day to prevent damping. Water should never be applied on the surface of the pans, but the sand in which they are plunged should always be kept damp, so that sufficient moisture may be absorbed from it.

When the plants begin to throw up fronds they should be lifted in small clumps and placed about two inches apart on the surface of soil composed of two parts loam, two parts leaf-mold and one of sand. The boxes should be covered with glass for a few days only, until the plants take hold of the new soil. The plants must be well shaded from the sun all the time. When they are large enough to pot, they should first be planted in two-inch size and shifted on when they require more soil. The addition of a little ground bone will be found a benefit to the potting-soil.

New Dorp, N. Y.

W. Scott.

The Cultivation of Roses.

THE best time for replanting the Rose-house for next winter is now at hand, for, if a steady supply of flowers is desired, it is necessary to replant the forcing-house as soon as roses can be cut from outdoor beds. With the proper selection of varieties, quite a limited garden will produce a regular rotation of cut roses during the summer.

For outdoor cultivation only strong plants should be selected, for, while much pleasure is derived from watching small plants develop into good flowering specimens, valuable time is lost when the old plants are kept in the forcing-house until late in the season. Outdoor planting in the middle states is completed before the 1st of June. Among the best varieties for the garden are *La France*, this variety blooming more or less from June to November; *Marie Guillot*, *Marie Van Houtte*, *Papa Gontier*, *Clothilde Soupert* and *Perle des Jardins*. From a combination bed of these admirable sorts roses can be cut continuously throughout the season.

In the selection of Roses to be used under glass the mistake

is frequently made of planting too many varieties in one house. This usually results in the comparative failure of several sorts, for exactly similar treatment is not adapted to all kinds, nor will the same soil give the best results for all varieties. Meteor and American Beauty are not likely to do their best when grown in a night temperature of fifty-six to fifty-eight degrees, in which *Souvenir d'un Ami* and *Niphetos* luxuriate. A few suitable sorts should be selected for each house, when success will be more certain. Cleanliness in the Rose-house cannot be too strongly urged, for with high cultivation there seems to be a corresponding development of various diseases, mostly of fungoid origin, and likely to yield to prompt and intelligent treatment. The interior of the house should have a coat of paint every two years, and every season, previous to refilling, the benches should be thoroughly coated with crude oil; this acts both as a preservative and insecticide, and while the odor is disagreeable for a time, the benefits are decided.

For planting in shallow benches I prefer strong plants from three-inch pots; these are more convenient to use than plants from larger pots, and, if healthy, they will give equally satisfactory results. Smaller plants will also do well if skillfully handled, but these naturally have less strength to depend upon if they receive a check after replanting. The opening of side ventilators on a level with the benches in which the Roses are planted has frequently been tested and discussed, but the weight of evidence seems to be against this practice. Attacks of mildew are much more prevalent under such conditions than when ventilation is confined to the openings at the top of the house, where air can be admitted freely, without so much direct draught on the plants. Very light shading over the newly planted Roses is beneficial to them, if it is not allowed to remain on the glass too long, and relieves the necessity for frequent watering of the young stock. A heavy shading tends to make the growth weak and soft.

Among the newer varieties that have rapidly attained popularity are *Madame Testout* and *Kaiserin Augusta Victoria*, both of which are strong growers and give flowers of large size. *Christine de Neve* has also been highly recommended in some quarters; the buds are especially desirable and bear some resemblance to *Papa Gontier*, both in coloring and shape.

Holmesburg, Pa.

W. H. Taplin.

Correspondence.

A California Garden.

To the Editor of GARDEN AND FOREST:

Sir,—An unexpected rain-storm in the third week of May has set every farmer and gardener in this valley to work. The air is cool, and gentle sea-breezes come in across the Coast-range, and that peculiar California season that is partly spring and partly summer, and that obeys no rules of the almanac, is upon us in its full splendor. The yellow fruits of the Loquat, *Eriobotrya Japonica*, are ripening in the tree-tops, and the Cherry avenue is reddening in the sun. In the vegetable-garden are new potatoes and Juno and Sapphire peas ready to be gathered. There are more strawberries than the family can use, and raspberries are beginning to ripen.

It is the season when all gardening work will prosper, whatever one's choice or whim. There is always water to irrigate with, enough for a few acres at least, and whenever the soil becomes too dry for transplanting or seed-sowing, it can be made wet in a few hours. At times, therefore, we are doing December or February work, and at other times pruning away the surplus of bloom or heading back plants that are running to seed. A stranger would certainly think it a September garden. For example, the *Eschscholtzia* bed, some thirty feet square, was seeded several years ago, and is now well established. When the first bloom is over, the plants are cut down with a scythe, the water turned on, and in a few weeks there is again a flaming sheet of flowers. There are additions to the wild garden every year. A bulb or flowering plant taken from the fields or cañons seldom amounts to anything the first year, but if given half a chance it is soon contesting with the garden-plants for space for its progeny. A beautiful large-flowered Wild Clover that I started from one seed in a pot two years ago is now well naturalized in the gravel of the road-side, and it would be easy to give a score of such instances.

Roses have flowered luxuriantly this year, and they are still magnificent, though lessening in quantity as the time approaches for their midsummer rest. Under our treatment we have roses ten months of the year, and two seasons of very heavy bloom. In broad terms, nearly every Rose does well

here, though a few mildew if neglected. One Rose-grower in this neighborhood a few days ago cut fifty thousand choice roses for the Rose Carnival of the Midwinter Fair. A plant of *Maréchal Niel*, which has reached the top of a twelve-foot trellis in this garden, has already produced three thousand choice buds this season. *Madame de Watteville* is a wonderful little Rose, somewhat hard to grow in perfection, but it well repays extra care; budded on *Papa Gontier*, or some such stout grower, it is less likely to mildew, and produces better buds.

Calceolaria rugosa and all the hardier sorts of *Calceolarias* are entirely at home here in a sheltered border, and so are many of the popular greenhouse and florists' flowers. When any plant does poorly under glass the rule in California is to bed it out and watch for improvement. Glass is useful, to be sure, but most amateurs value it chiefly for propagating purposes. The open-ground sowing of seeds that was easy and, indeed, almost universal a quarter of a century ago, when there were no insect pests and no slugs here, is no longer practicable in every garden. Seed pans or boxes are preferred at all times of the year, and everything except a few patches of self-sown annuals is transplanted into well-prepared soil. It is a great saving of labor, as less hoeing and weeding have thus to be done.

The work of keeping up a garden is probably less in these Coast-range valleys of California than almost anywhere else. Amateur gardening is easy here, and very little skill or knowledge is required to produce beautiful effects. There is not a single professional gardener employed in this region, although every house lot has its flower-garden. The Portuguese and Italian laborers are handy in such matters, and they do good work under directions. California florists learned long ago, however, that there is little or no money for them in stocks of bedding-plants. "If I sell a ten-cent *Geranium* to a farmer's wife," said a commercial grower to me, "it is over the whole valley in less than a year, and I never sell another. Winters that would kill off all the soft-wooded plants would give our business a chance."

Niles, Calif.

Charles H. Shinn.

The Forest.

Mixed Oak and Beech Forests of the Spessart.—II.

VALUE OF THE OAK.

IN the Spessart, as throughout Germany, the most valuable tree is the Oak. The Beech and the Hornbeam are useful companions; nay, they may be said to be necessary for the good development of the Oak, but the value of their produce is small. An Oak-tree, twenty-four inches in diameter, breast-high, and 105 feet high, will yield five cubic metres, or 176 cubic feet, of salable wood, including pieces down to three inches in diameter. If sound, it will sell as follows: Logs, fifty-five per cent. or 2.75 cubic metres at fifty marks a cubic metre, 137.50 marks. Small timber, chiefly for wine-casks, twenty per cent. or 1. cubic metre at fifteen marks. Firewood, twenty-five per cent. or 1.25 cubic metres at 3.50 marks, 4.38 marks. The whole worth 156.88 marks.

A Beech-tree of the same size will sell as follows: Timber, thirty per cent. for thirty marks; firewood, seventy per cent. for 17.50 marks, or 47.50 marks altogether. The timber of the Hornbeam sometimes fetches a little more than beech, but the tree grows more slowly and never attains the same size as the Beech.

Thus, assuming a dollar as equivalent to four marks, an Oak-tree of the size mentioned would sell for thirty-nine dollars, and a Beech-tree for twelve dollars. It must, however, be borne in mind that, while an Oak-tree of that size would be 300 years old, a Beech-tree in the same locality would attain the same dimensions in 180 years. Many of the Oak-trees in the Spessart are 400 years old and upward, and have a much larger diameter, often containing twice the volume of wood. The price of Oak timber increases considerably with the diameter of the tree, large logs not rarely fetching 100 marks per cubic metre. Such trees would be worth \$125 to \$150 apiece, or even more. Of Oaks containing five cubic metres, on good soil and under favorable circumstances, sixty trees might stand on one acre. The outturn of an acre at the fall, therefore, would be worth sixty by thirty-nine, or \$2,340, while the wood of an acre

stocked with Beech of the same size would only be worth \$720. This result, however, would be attained in 180 years, whereas the Oak wood would be 300 years old.

These figures will make it clear that of the trees indigenous in the Spessart, the Beech far preponderates, its growth is more vigorous and faster than that of the Oak. Hence, in working the forest, the tendency will always be for the Beech to gain the upper hand and for the Oak to disappear. This will explain sufficiently why it is necessary to make special efforts to frame the plan of working the forest, so as gradually to increase the proportion of Oak in it.

PRESENT GROWING STOCK OF OLD OAK-TREES.

From time immemorial the Spessart has been one of the principal sources of large Oak timber in western Germany. The rich wine-producing districts in the valleys of the Rhine and the Main have chiefly depended upon these forests for their wine-casks. And for boat-building and house-building the Spessart has always furnished large quantities of Oak. In spite of these constant and heavy demands, large numbers of old Oak-trees, from 240 to 500 years of age, still remain standing. These old trees are mostly found scattered in the old Beech-woods, but there are some areas where the Oak forms a large proportion of the growing stock. The most remarkable of these is situated in the forest-range of Rohrbrunn, on the north-west slope of the Geiersberg, which, as already mentioned, is the highest point of this mountain-range. Here there are upward of 1,000 acres in one block, stocked with Oak 240 to 245 years old, at the rate of seventy trees per acre, the trees eighteen to twenty inches in diameter and ninety-five feet high. Among the Oak, here and there, are a few Beech-trees, and the ground is everywhere covered with an underwood of Beech, partly natural, partly planted. These Oaks date from the middle of the seventeenth century; they sprung up soon after the thirty-years' war (1618-1648), and some of the mother trees are still left, giants 500 years old, with a diameter of forty inches. This is not rapid growth, but the elevation is high, 1,300 to 1,700 feet, and the soil on this slope is not very deep and not very rich.

That this is slow growth will be understood from the following figures: A survey made in August, 1891, of a sample area, six-tenths of an acre, selected as a good average, gave ninety-one trees per acre, mean height ninety-five feet, tallest tree 105 feet, and 8,087 cubic feet, equal to 97,000 superficial feet of timber—oak, pure, it will be remembered, with an underwood of Beech, which, of course, was not included in the survey, at an elevation of 1,500 feet. In Normandy, at a low elevation, on rich soil, in a mild and uniformly moist climate, there is a wood of sixty-eight acres, in the forest-range of Lyons-la-Forêt, consisting of Beech, sixty-five per cent.; Oak and Hornbeam, thirty per cent., and other species, five per cent.; sixty-eight trees per acre; mean age, 160 years, with some old standards up to 240 years old; mean height, 147 feet; tallest tree, 164 feet; volume of timber, 14,300 cubic feet, equal to 168,000 feet, board measure.

Thus, 160 years in Normandy have produced much taller trees, and nearly twice the volume of timber per acre, than 240 years in the Spessart. The explanation is that Beech grows faster than Oak, as previously explained, and that soil and climate are much more favorable. These are forests in Europe in about fifty degrees of north latitude. They are beaten out of sight by the exceedingly mild and moist climate on the western slope of the Coast-range, in California, at about thirty-eight degrees of north latitude. Here it is reported that some Redwood-forests yield 250,000 or even 500,000 feet, board measure, per acre, and this statement does not seem incredible, for, in his book on the forests of North America, Dr. Heinrich Mayr gives an account of a sample area examined by him, with fifty-six trees per acre, mean height 275 feet, containing 190,070 cubic feet, or 2,280,840 feet, board measure. However, the age of this wood was 700 years. It would be a delightful task

to manage forests with such wonderful powers of timber production. One of the first points to make for would be to determine the earliest age at which the Redwood produces marketable timber of really good quality. But even if a rotation of, say, 200 years were found to be necessary, the rent per acre of such forests, managed on conservancy principles, would be very high.

The history of this fine and valuable German forest may be understood if we examine the forest on the eastern slope of the Geierskopf near the top, which consists entirely of an open wood of old Oak-trees, over 400 years of age, with a few Beech. It is generally assumed, and this assumption is borne out by such old records as exist, that 400 to 500 years ago the higher portions of the Spessart were stocked with pure, or nearly pure, Oak-woods. Now, it is one of the peculiar features of pure Oak-woods, a peculiarity which that tree shares with the Scotch Pine, the Larch and other trees, which, while young, demand much light and are impatient of shade; that as the wood grows older it gradually gets thin and open, and the canopy of its foliage no longer completely shades the ground. An Oak-wood raised by broadcast sowing or the result of self-sown seedlings will at the age of twenty years, if fully stocked, have about 1,200 stems per acre; when 100 years old, 250 to 300 only will be left, and of them at the age of 250 years, seventy only will be left on the ground. The trees which disappear during the long life of an Oak-wood are overtopped and gradually die out. In the higher portions of the Spessart it is probable that, besides the natural tendency of pure Oak-woods to get thin and open when old, other factors were at work in the same direction. These woods were doubtless used in summer as the high level grazing-grounds by the rich villages which studded the fertile open country. The grass under the partial shelter of scattered Oak-trees is excellent, and the herdsmen doubtless meant, by fire or otherwise, to get rid of a portion of the trees. The result has been that these pasture-grounds on the higher ranges of the Spessart were like a gigantic park, studded with old Oak-trees, forming open woods, the ground under the trees being clothed with a dense matting of grass. During the thirty-years' war, however, these villages in the open country of Franconia were repeatedly devastated, and the cattle killed or driven away; the young Oak, therefore, which until then had been kept down by the cattle, took advantage of the opportunity, and on the occurrence of the first heavy Oak-mast dense thickets of Oak sprang up and covered the ground. Oak-masts do not occur frequently in the Spessart. During the fifty years from 1820 to 1870 there have only been nine heavy seed years. In spring, when the tree is in blossom, night frosts frequently prevent the fertilization of the female flowers or kill the young fruit. Caterpillars, also, not rarely destroy both young leaves and flower-buds. A good Oak-mast is naturally an event of the greatest importance in the Spessart, and it generally occurs once in five or six years. The acorns, being heavy, do not fall far from the tree, but in a good seed year the ground near the mother-trees is covered with acorns, and the nearly pure Oak-woods, 240 to 245 years old, most likely owe their origin to a heavy Oak-mast which occurred soon after the close of the thirty-years' war, when there were no cattle left to eat and destroy the young seedlings.

In the forest-range of Rothenbuch, which adjoins that of Rohrbrunn on the north, may be mentioned two smaller areas stocked with magnificent old woods of mixed Oak and Beech, one being the compartments Zuber and Denkstein, of 110 acres, where some 1,100 huge Oaks, 375 years old, are mixed with a large number of younger Beeches 145 years old. The Oaks are 115 feet high, with tall, clean boles, the result of having grown up closely pressed by the Beech. They stand on gentle slopes with southerly aspect on the north side of the Hafenlohr valley. Higher up on the same side of that valley is the famous wood known under the name of Metzgers Graben, about 250 acres, with seven Oaks per acre, from 400 to 500 years

old, magnificent trees 120 to 150 feet high, mixed with Beech of all ages, giving the appearance of a virgin forest, in which all age-classes are represented.

Boon, Germany.

D. Brandis.

Notes.

A college extension course on subjects of practical interest to farmers is maintained by the Michigan Agricultural College. This course in systematic reading, known as the Farm Home Reading Circle, is open to all who wish to take it, and is free of expense except for books. The membership roll is already large and steadily increasing.

At a recent auction sale of Orchids in England a plant of *Cattleya Skinneri alba* was sold for 160 guineas. A small plant of the Quorn House variety of *Cattleya Mendeli* brought 150 guineas, although only a year ago it had been sold for twenty-eight guineas. *Lælia purpurata Hardyana* brought 130 guineas; a few years ago the same plant was sold for twenty guineas. These prices seem to indicate that, in spite of hard times, certain Orchids still command extraordinary prices, although, as a rule, the prices, except for a few rare varieties, are very much lower than they were several years ago.

The *Northwestern Lumberman*, which a few years ago took the ground that the supply of white pine in the north-western states was inexhaustible, now shows by what it believes to be authentic figures that the shortage in one district alone for the current year will be seven hundred million feet; and information points to a general shortage in all the north-western pine territory, running into billions of feet. Lumber-dealers of the north-west should begin to realize that the deficiency of northern pine must be made up from supplies from the Pine-forests of the south Atlantic and Gulf states, although an attempt will perhaps be made to replace it, for a few years at least, by yellow poplar and other non-coniferous woods.

The Board of Park Commissioners of the city of Buffalo recently decided to establish a botanic garden, and about 150 acres have been set aside for this purpose on the slope of a beautiful elevation at the southern boundary of the city, known as Limestone Ridge. The main drive-way through the site is partially constructed, and some grading has been done. Excavations have also been made for a series of lakes, and a conduit is being laid to Cazenovia Creek, two and a half miles away. A few groups of natural forest-trees on the ground will be preserved, but no planting has yet been done. If the liberal policy of the Park Commissioners is continued and the garden is managed in the scientific spirit, it cannot fail to become an educational institution of importance.

Undoubtedly the finest, for general horticultural purposes, of the early-flowering white-blossomed *Spiræas* is that known in gardens as *S. Van Houttei*, which is said to be a hybrid between the hardy *S. trilobata* and the beautiful, but only half-hardy *S. Cantoniensis*. Its large, pure white, short-stamened flowers are produced in close corymbose clusters on short, leafy lateral branchlets along the branches. The branches are slender and recurved. The plant will grow six feet or more in height and spread as much in diameter, and with ordinary care it will bear a profusion of flowers regularly every year. The dark green foliage is abundant, seems remarkably free from blemishing diseases, and it keeps a fresh and healthy appearance throughout the summer and well into the autumn, when many other species become leafless. It is usually in finest flower in the last week of May or about the 1st of June.

Owing to the warm days in early spring and the continued cool weather in May, many shrubs are blooming together now that are usually separated in their flowering season by one or two weeks. In a gorge in the northern part of Central Park a mass of *Rhododendrons* in flower, mostly *R. maximum*, are effective against a background of forest-trees, with a charming pool bordered by aquatic plants and *Irises* in the foreground. A group of *Kalmias*, *Pæonies* and several fine species of *Rhododendrons* are conspicuous on a knoll near the entrance at Fifty-ninth Street and Fifth Avenue. *Viburnum plicatum*, *V. Opulus* and the graceful *Snowball*, *V. sterilis*, are all in profuse bloom, and of many *Spiræas* in flower now *S. opulifolia* is especially attractive. The flowers of the Bush Honeysuckle, *Lonicera Tartarica*, of *Philadelphus grandiflorus* and other species of *Syringas*, of *Kerria Japonica* and the Acacia-like *Bladdersenna*, *Colutea halepica*, appear with those of *Deutzia crenata* fl. pl. and *D. gracilis*. Other shrubs now in bloom are the California Privet; the yellow-flowering Currant, *Ribes*

aurea; *Weigela rosea* and the golden-leaved variety *nana aurea* and other species of *Weigelas*. *Rosa setigera* and its hybrid, the double-flowered Queen of the Prairies, are among the most effective climbing Roses, and Harrison's Yellow and many other hardy Roses are already attractive. *Chionanthus Virginica* is draped with its lace-like flowers, and several species of Thorns and Tamarisks add to the variety of this unusual flowering season.

The two Chinese *Magnolias*, *Magnolia Watsoni* and *M. parviflora*, were flowering in the Arnold Arboretum last week. These two species produce their flowers after the leaves have attained nearly their full size, and resemble one another in their cup-shaped white perianths and bright red stamens. *M. Watsoni*, however, is the more beautiful plant, distinguished by its obovate-oblong leaves, glaucous and coated on the lower surface with pale soft hairs, four or five inches long and two or three inches broad, with ten to fourteen pairs of veins arcuate and united near the margins, and by its larger flowers, which are nearly four inches across, and are tinged with pink on the outer surface of the sepals, while on *M. parviflora*, the leaves, which are only about half as large as those of *M. Watsoni*, are orbicular-obovate, glabrous or slightly pilose below on the midribs and on the four or five pairs of remote veins. The flowers are not more than two or three inches across; they are nodding in the bud, and do not emit the powerful, slightly pungent, agreeable odor which is one of the great attractions of *M. Watsoni*. Among recent introductions of hardy trees and shrubs these two *Magnolias*, which appear to be only known in cultivation, their native country being uncertain, should take the highest rank.

We have more than once alluded to the work of the Division of Vegetable Pathology in Washington in experimenting upon the pollination of Pear-flowers. An interesting bulletin of eighty-six pages, with twelve full-page plates and a complete index, has recently been issued by the department. Some of the general conclusions are that many of the common varieties of Pears are incapable of setting fruit without cross-pollination. Even then, pollen from another tree of the same variety is no better than pollen from the same tree, and fruit will not set without pollen from a distinct horticultural variety—that is, from a tree that has grown from a distinct seed. Pollen of two varieties may be absolutely self-sterile, and at the same time perfectly cross-fertile. Bad weather during flowering time has an injurious influence on fruitage if it prevents insects from fecundating the flowers. Some varieties are capable of self-fertilization, and when this occurs the fruit is uniform in shape, differing from the crosses not only in size and form, but also, in some instances, in the time of maturity and in flavor. Fruits arising from cross-fertilization are well supplied with sound seed, while self-fertilized pears are deficient in seeds. Even with varieties capable of self-fecundation the pollen of another variety is prepotent, and unless the entrance of foreign pollen is excluded most of the fruits will be affected by it. The practical conclusion from the investigation is that solid blocks of one variety should not be planted in orchards, and that it is not desirable to have more than three or four rows of one variety together unless it is abundantly self-fertile. If large blocks of trees of one variety which habitually blossom well fail to fruit for a series of years, a probable remedy would be to graft in other varieties, so as to supply foreign pollen. Care should be taken that there should be enough bees within two or three miles to properly visit the blossoms, and insect visits should be favored by planting wind-breaks or setting the fruit-trees in sheltered positions. Apples are more inclined to be sterile to their own pollen than Pears, but the Quince seems to fruit nearly as well with its own pollen as with that of another variety.

The *Gardeners' Chronicle* announces the death, on the 30th of April last, of Thomas Lobb, who, in 1840, entered the services of Veitch & Sons as a collector. During the twenty years he traveled for the firm he visited the Khasia Hills, Asam, Moultmein, Lower Burmah, the Malay Peninsula, Java, north Borneo and the Philippine Islands. Among his introductions, which have not been surpassed in horticultural value by those of any other collector in the Indo-Malayan regions, are many Orchids now common in gardens, the ancestral forms of the Javanese hybrid *Rhododendrons* and some of the first *Nepenthes* ever cultivated in Europe. Among the Orchids introduced by Mr. Lobb are *Vanda cœrulea*, *Cypripedium villosum*, *Calanthe rosea*, *Cœlogyne speciosa*, *Cypripedium barbatum* and *Phalænopsis intermedia*. His elder brother, William Lobb, was also engaged in collecting plants for the Veitchs, the field of his successful labors extending from Brazil to California.

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Water-courses in their Relation to the Public.

IN discussing proposed improvements to the Charles River at Boston, in our issue of May 16th, we spoke of the antagonism of the residents on the water-side of Beacon Street, because of the recommendation by the Park Department that a strip of new land should be created on the Boston side to be occupied by an additional row of buildings, which, of course, would cut off their view of the river. We remarked that, "if the new frontage cannot be secured, then, if possible, in compensation for retaining their privilege, the Beacon Street residents should be required to give their houses an aspect on their water-side worthy of the prospect which they so highly esteem." A correspondent now asks us to give a few suggestions as to how such an aspect could be procured by the owners of these houses and stables which are already along the river-bank.

The problem involved is a very important one, not only specifically in relation to this particular instance, but as a matter of general application, where the interests of a community are antagonized by undesirable forms of private occupancy of sites that especially concern the public welfare. When the important bearing which a body of water has upon the recreation and the health of a community is considered, it is remarkable that almost universally in this country, the opportunities offered by water fronts have not only been thoroughly neglected, but, in most instances, nuisances or structures of a specially ugly character have been permitted. These abuses exist notwithstanding the fact that desirable improvements might be made with ease and economy, owing to the naturally pleasing character of the surroundings. When park-like improvements are planned for an American municipality it usually happens that instead of making the most of distinctively characteristic natural features, such as a river-bank, a lake-front or a sea-shore, ground is chosen for the purpose that is not at all characteristic, and which must be adapted for the desired uses at the expense of much trouble and money; whereas, had a natural site been selected, little adaptation would have been necessary. In planning for the future occupancy of are-

gion by a large population, particular attention should be given to the water-courses, with reference to utility as well as to beauty. It sometimes happens nowadays that plans are made with special reference to the growth of a large city. This should be one of the first matters to be attended to, but, as a matter of fact, it is frequently not thought of at all. Wise planning would secure uninterrupted surface-drainage by making the lines of the water-course the bases for roads and drives of a park-way character. The best grades and a pleasant diversity of scenery are thus secured, and forms of occupancy are prevented that, by the creation of nuisances and the pollution of running water, seriously endanger the health of an entire community.

In the projects for the improvement of the metropolitan region about Boston now under consideration due regard is had to this important element, and so far as it can be done in a general way by the laying out of proposed park-ways and boulevards under the authority of the Metropolitan Park Commission, it is desired to take advantages of the banks of the rivers and streams. In one of the municipalities of the metropolitan district, the city of Newton, a system of thus utilizing all the water-courses in the place has been favorably considered, and certain important details of the plan are already realized. The same course should be taken throughout the entire territory of "Greater Boston." It has been made impossible, however, by the building up of many localities, and enormous future expenses for costly culvert construction, overflows and bad sanitation are thus entailed. The proposed improvement of the Charles River is one of the most important features of this character, and the health and prosperity of the community will be immensely promoted if it is carried out upon the lines proposed. It seems strange that the desirability of a beautiful water-front for this basin was not regarded in the planning of the great Back Bay improvement. The eminent architect, the late Arthur Gilman, was the author of this plan, which, in most respects, was a capital one, and characterized by liberal foresight. It was a singular oversight that permitted the back premises of Beacon Street to occupy the water-front.

Now, that occasion to remedy the mistake arises, the best way to meet the large expense required appears to be in the creation of new land, the profits on its sale providing for the cost of the improvement. The commonwealth would make a very considerable sacrifice in foregoing this great source of income in order to preserve to the present water-side residents their charming view. It has therefore been suggested that, if these residents are to secure a continued enjoyment of their present privilege by a limitation of the proposed filling to a width only sufficient for a drive and esplanade along the bank, they should, in return, contribute very liberally toward the expense of the great improvement, and also agree to substitute an agreeable architectural appearance of their premises for the present unsightly rear walls and rows of stables, back sheds and other offensive features for which they are responsible. Considered from the point of view of the public welfare, the plan of the joint board, which has been most thoughtfully considered by the most competent expert authority, appears thoroughly commendable. But should, for any reason, a modification be found necessary in the direction indicated, it is probable that the Beacon Street residents will be called upon to make liberal concessions in return. They cannot expect and probably do not desire to have a great public improvement blocked or marred solely for their private benefit.

The problem is, of course, a difficult one, but if the individual householders would divide the expense, the cost of the change need not be an excessive burden to any one. The easiest solution at first thought seems to be the erection of extensions so as to give new façades upon the river. Probably a serious objection to this, however, lies in the fact that the houses are generally planned with reference to the river from certain rooms, as libraries,

dining-rooms and music-rooms. The present arrangements would thus be interfered with, while it would probably be difficult to reconcile the extensions with the original plan.

A similar expedient would be to modify or reconstruct the present rear elevations, back yards, etc., in a way to give them an agreeable appearance. This might be achieved, perhaps, by the addition of balconies, loggias and bay-windows; by painting existing walls of rough brick; by equalizing sky-lines with the help of balustrades and parapets; by making the line of stables and back sheds the basis for a terrace-like effect, and by similar expedients. It is essential, of course, that these changes should be made upon some basis of common agreement, and not left to individual caprice in any respect, and that there should be a carefully studied harmony of effect in color, design, etc. Unity of action would be absolutely essential. To this end we recommend that the householders join in commissioning the most competent architectural and landscape authorities to devise the best possible scheme for dealing with the question. The most difficult element in this proposition is the fact that a few refractory individuals would, by their refusal, have the power to thwart the entire project.

Flower Days of the Midwinter Fair.

LIBERAL use has been made of both wild and garden flowers in decorations and otherwise at the California Midwinter Fair. The public has responded quickly to every effort made in this direction, and it is easy to see that any future fair in California will have still greater flower festivals and exhibitions. The material is here, if properly organized, to make the season of annual flower events highly attractive to the rest of the world, and full of educational value to the people of California, more especially to the children. Santa Barbara, the charming seaside city, has already a national reputation for its flower day, and other towns and colonies are instituting annual festivals. French, Spanish, Portuguese, Italian and oriental influences are all seen in the creations of the California flower festivals, while the guiding spirit of the whole is clearly American.

The notable flower event of the Fair was the floral festival of Saturday, May 19th. Four great arches of flowers, bunting and Pampas-plumes were built at the corners of the Grand Court, and festoons of wild flowers stretched over the 500 feet of space from the flag-poles at the side to the tall tower in the centre of the court. White, green and gold were the prevailing colors here. In front of the Administration Building, a net containing 40,000 roses stretched between the flag-poles. Many buildings were beautifully decorated with evergreens, festoons and flowers. An estimate was made that the floats, arches and carriages in the procession, the main effects on the buildings and the battle royal in the afternoon used not less than four million flowers, a majority of which were roses. Such estimates are necessarily inexact, for no one could keep tally of the incoming boxes and wagon-loads of bloom, but collections of five or ten thousand roses made so little impression in the large spaces of the Fair, that one could measure in some degree the quantities required to cover the huge floats and triumphal arches.

The conventional elements of a flower procession, as of any May-time masque or other outdoor celebration, are seldom as attractive or artistic as the more free and original displays of individual talent. Great floats representing battle-ships and municipalities seem too often as formal and unimaginative as the grotesque allegorical pieces so popular in mediæval Europe. They are often the merest survivals of a splendid past, impossible of artistic revival. What seems to better suit the modern flower festival is the spontaneous and universal spirit of gayety expressed in a thousand simple forms. Flower-covered bicycles, carriages, carts, jinrikishas and other

vehicles; flower-laden children, and crowds as full of sunshine as an Italian summer afternoon—these were the elements that really gave life to this California carnival, through which the huge floats lumbered like unwieldy galleons.

Nothing in the whole procession was more charming than a Japanese jinrikisha covered with the rich golden flowers of the beach lupin. A Japanese girl sat within and carried golden lupins. In all details, the harmony of color was perfect. Marguerites, white and yellow, were used in another jinrikisha, and a third was many-colored. The Chinese vehicles were probably the richest in color-scheme of anything on the grounds. Oriental flower-girls, blossom-wreathed equestrians, a garlanded bull and its rider from the Hawaiian village, and similar features passed in procession or wandered through the crowd, which, in the evening, numbered about 150,000. As I stood in the great court, watching the lighting up of building after building with electric flashes, the sweet breath of acres of blossoming Eucalypts, Acacias and white and golden Genistas came from many slopes of the wide park in which the Sunset City lies. Other acres of smaller blossoming plants lay about me, in and around the Grand Court. The flower carnival was merely a passing incident in the story of spring-time, and the hundreds of laughing children, who carried flowers home, were only one company out of the tens of thousands who take pleasure every day in the innumerable gardens of California.

Berkeley, California.

Charles Howard Shinn.

The Road to the Pyramids of Gizeh.

THE avenue which is here most imperfectly depicted (see p. 235) is, I believe, in reality the noblest and most beautiful shaded avenue in the world. There are other fine avenues in Cairo, and that which connects the city with the village of Shubra on the north is justly very much admired; but it is composed of two sorts of trees, while the one above represented has only one sort. It is in Bulak, an island in the Nile west of Cairo, and four or five miles long. The avenue itself is on the western side of the island, and is, perhaps, two miles or two miles and a half long. The trees I have not measured, but I should say they are from seventy to eighty feet high, and the finest of them must be about one hundred feet in diameter through the top. They are all of them of the species to which Bentham gave the name of *Albizia Lebbeck* (Arabic, *Lu'bach*, according to Speke), and such superb plants I have not beheld anywhere else. It is, of course, a tropical tree, related to the Acacia family, and originating, as some writers say, in southern India. It is common enough in the Orient, and I have seen several very poor specimens on the hills around Jerusalem, and much better ones on the slopes of Vesuvius; but nowhere does it attain the magnificent proportions or the extraordinary beauty of foliage which are displayed in this avenue. The richness of its dark color and the substance and lustre of its leaves give it a peculiar charm.

The best account of the *Albizia* group that I have been able to find is that in Eugène Fournier's *Notes sur le genre Albizia* in the *Annales des Sciences Naturelles* for 1860, where he specifies eighteen varieties. Bentham's special work on the Leguminosæ I have not at hand, but in his *Flora Australiensis* he describes five species, including the *Lebbeck*; Baron von Müller, in his valuable work on tropical plants available in Australia, describes eight varieties. Schweinfurth also speaks of finding the *Lebbeck* in the equatorial regions of Africa; and Captain Speke found it planted before the government house in Khartoom.

The variety of *Albizia* with which we are most familiar in the United States, the *Julibrissin*, of which an admirable description appeared in *GARDEN AND FOREST* (vol. ii., p. 532), is said by Monsieur Fournier to have originated in the forests on the shores of the Caspian Sea.

New York.

C. A. Dana.

American Parks.

DRUID HILL PARK, BALTIMORE.

THE beautiful city of Baltimore, in addition to its admirable situation at the head-waters of Chesapeake Bay, has agreeable undulations of surface, which give variety to its streets and importance to its monuments. With wise forethought, more than thirty years ago, one of the finest pleasure-grounds in the United States was acquired by the city in a forest of noble trees that have been growing from time immemorial, with the right conditions to attain perfection.

This forest has since been maintained as a place of recreation for its inhabitants to the lasting honor of the city which it adorns. The seven hundred acres of timber-land which constitute the present park, before their purchase by the city, had been for more than a hundred years in possession of the Rogers family, and the trees received the care bestowed on a valued private estate and grew to their present great size and beauty under the careful protection of their owners.

In 1689 Lord Baltimore deeded to Thomas Durbin a tract of 350 acres, called Hab-nab-alt-a-Venture. Of this, 150 acres, after passing through several hands, were deeded to Dr. George Buchanan in 1741, and two hundred acres had come in another line to Nicholas Rogers in 1716, which portion was willed to his daughter Eleanor, who married Dr. George Buchanan. Another tract, called The Level, of two hundred acres, was also inherited by Dr. George Buchanan, so that in his and his wife's estate there were 750 acres of valuable land on which he made his home, and to which, out of respect for its mighty Oaks, he gave the appropriate name of Druid Hill, which it still bears. In 1750 Dr. Buchanan died and was interred in the little cemetery, which, by the conditions of the purchase, still remains undisturbed within the park-enclosure. Under the English custom of primogeniture, his eldest son Lloyd inherited Druid Hill and left it to his only child, a daughter, who married her cousin Nicholas Rogers, and thus the property went into the Rogers family. It was from Lloyd N. Rogers, son of this marriage, that the park was purchased by the city of Baltimore in 1860. The last proprietor was an eccentric person, who was morbidly anxious to preserve the trees about him, and who carefully guarded them and jealously excluded all intruders who might do harm. The property was thus in admirable condition when acquired by the city, and almost the only work necessary was to open roads through it, so as to make its beauties accessible to the public.

The history of the purchase of the park is of practical interest to other towns desirous of obtaining parks at small cost to the municipality. At the time of its acquisition, in 1860, Baltimore was half-developed, and was in no condition to impose added taxes upon its people, and the system of street-railways was about to be introduced, under the difficulty of a wide diversity of opinion as to the profit of this enterprise. The fare on these railroads was established at an average of five cents per capita, but no bonus was exacted from the company for the use of the city streets. Therefore, when the ordinance creating the passenger-railways was presented for the approval of the Hon. Thomas Swann, then Mayor, he wisely insisted, as a condition of the franchise, that one-fifth of the gross receipts should go into the treasury as a fund for the park-purchase. To illustrate the practical working of this plan, it may be sufficient to say that for the first year the bonus paid into the city treasury amounted to \$33,000, and that the increase soon showed promise of a revenue from \$50,000 to \$75,000 yearly from this source. Since the introduction of the electric cars, the revenue, which in 1868 was about \$84,000, has become much greater, as travel has greatly increased, and nine per cent. is the park tax now exacted from the road. Thus, on delivering into the hands of the people this princely acquisition, not only was no bill of cost presented, but the property was provided with an income for its future maintenance. Exclusive of improvements, the cost in 1868 had been about \$511,000.

On October 19th, 1860, Druid Hill Park was opened to the public with appropriate ceremonies, the Street Railway Company making a voluntary contribution of a suitable structure for the ceremonies of the occasion. So well laid out were the grounds, that even then the park could be penetrated in all directions by roads several miles in extent. Immediately after this inauguration the commissioners began a systematic course of operations, laying out the main avenue, the width of which is thirty-two feet, permitting four carriages to drive abreast; widening the farm-roads to make them convenient for carriages, bridging streams, cleansing the numerous springs and making accessible the remote parts of the

grounds. Mr. Havard Daniels, who had made the parks of Europe a special study, was appointed landscape-gardener, and even before the inauguration he had accomplished much to throw the park completely open to the public. Since then many improvements have been made, and the park is the pride and delight of the cheerful inhabitants of the gay Maryland city.

The surface of the park is delightfully diversified. There are shady ravines and smooth hill-slopes, from the summit of which one has a broad outlook upon the picturesque groups of trees, and the shadow-flecked grass between, where flocks of Southdown sheep graze, guarded by collie and shepherd. One charming feature of the wood is the free herd of deer, of which two hundred are permitted to roam at large through its precincts. More than sixteen miles of drives wind among the fine old Oaks, and there are numerous bridle-paths and footways under their interlacing branches. Directly through the park runs a flag-stone walk for the convenience of the residents of Woodbury, a manufacturing town beyond its gates. There are sixteen lakes in the park. Druid Lake is the largest, and is a fine sheet of water, from which a tall fountain throws a lofty jet. This lake is artificial, and is practically a reservoir, part of the Baltimore system of water-works. A smaller lake is fed by a spring and is thronged with wild fowl. Another pond is used for boating in summer and skating in winter, and has, on an island in the centre, a picturesque little lodge. A chain of four ponds makes an attractive feature in another part of the park.

Rustic shelters and summer-houses are scattered here and there, and the old Maryland mansion-house of the Rogers family still remains within the confines of the park, nobly situated upon a rising ground commanding an extended view, with its verandas amplified to accommodate the public. There are large conservatories and a Palm-house, and the Maryland Building, erected by the state at the Centennial Exhibition in Philadelphia, has been set up here, and serves as a museum for relics having historic interest.

The lakes and rushing streams of the park, and its hills and pleasant meadows are of extraordinary beauty. Among the forest-trees are many of Oaks, Sycamores, Tulips, Hickories and other deciduous trees, which fully equal any to be found in the best public parks in the world. Even in winter the spectacle of the huge trunks and great interlaced branches is imposing, and the natural groupings on the broad lawns are of infinite variety. Vistas cut through the woods disclose views of the lake and the city, and from an elevated part of the grounds called Prospect Hill there is an extended prospect over the surrounding country.

No park in this country rivals Druid Hill in natural advantages, and it is to be hoped that future planting will not destroy its present noble and dignified aspect. A disposition to spot evergreens about under the old trees is unfortunate, since it tends to destroy the natural repose and park-like beauty of the scene, but this seems to be a universal failing among the planters of parks, who, not satisfied with a natural arrangement, seek to introduce something that is itself rare and beautiful, but which lacks appropriateness in such a situation. The setting of young evergreens among ancient Oaks and Hickories is a mistake, from a picturesque point of view, and can, I fear, hardly be considered good forestry. An advance in public taste has been shown, however, by a merciful removal of a row of urns for flowers which once lined the main avenue, so that wise ideas will probably in time prevail, and nothing be allowed to mar the stately old-time dignity of these remarkable trees and the perfect beauty of ancient Druid Hill.

Hingham, Mass.

M. C. Robbins.

Foreign Correspondence.

The Temple Flower Show.

THE seventh great annual exhibition of the Royal Horticultural Society was held in the gardens of the Inner Temple, May 23d, 24th and 25th, and was a great success, notwithstanding the exceptionally unfavorable weather experienced in England for the week or so preceding the show and the cold wet weather of the opening day. The exhibits generally exceeded both in number and quality those of previous years, and had the management conceded all the space asked for by exhibitors the show would probably have been as large again.

It speaks well for the healthiness of horticulture in England when an exhibition of such magnitude can be got

together without the stimulus of prizes other than the medals, which are given more as a stamp of recognition than for any value they possess. Not only do professionals and amateurs who practice horticulture in this country readily take the trouble and go to the expense necessary to exhibit their best products, but, fortunately, the public show an interest in inspecting them, the exhibition grounds being crowded to excess all day, while a broad and continuous stream of people were to be seen going to or from the show by way of the beautiful road which skirts the Thames from Blackfriars Bridge to Westminster. It was an exhibition to be proud of, and the Royal Horticultural Society never did a better stroke of business than when they got permission from the law professors who guard the sacred belongings of the Inner Temple to hold annually an exhibition in its grounds.

Orchids were far ahead of all other exhibits as regards the number shown, their beauty and interest and their attractions for visitors. Sir Trevor Lawrence and Baron Schröder among the amateurs, and Messrs. F. Sander & Co., James Cypher, B. S. Williams & Son and Low & Co. among nurserymen, were the principal exhibitors. There were few new Orchids, but a great many of those rare and valuable varieties which are only to be seen in first-rate collections. Baron Schröder's magnificent display of *Odontoglossum crispum*, comprising nearly all the choicest forms of this species, was one of the richest features of the exhibition. Second only to this was Messrs. F. Sander & Co.'s group of white varieties of *Cattleya Mossiæ*, comprising twelve distinct forms, and including the plant of *C. Reineckiana*, for which they paid one hundred and sixty guineas at the Hardy sale of Orchids last week. This fine specimen of a very fine variety bore about fifty flowers, from some twenty or more healthy growths. A group of *Odontoglossum crispum*, from G. Vincke, of Bruges, was rich in good varieties, the plants showing extraordinary vigor of growth and spike. *Lælia purpurata* is always well represented at this exhibition, and the group of it shown by Mr. James Cypher, the Cheltenham nurseryman, was a marvel of cultural skill and beauty of flower. Baron Schröder's magnificent specimen of *Cœlogyne Dayana* this year carried no less than twenty-four racemes, the total number of flowers being nine hundred and thirty. Messrs. F. Sander & Co. showed many fine examples of this Orchid, which is one of the most remarkable, if not one of the most beautiful, in the genus. The most exciting Orchid shown was a variety of *Cypripedium callosum* named *Sanderæ*, which repeats in this species the freak of *C. Hyeaenum* among the sports of *C. Lawrencianum*. To my taste it is not a pleasing Orchid, its colors, pale green and white, being more remarkable than beautiful. However, its fortunate owner, Mr. F. Sander, assured me that he would not take a thousand guineas for it, as it will have immense value for breeding purposes. A hybrid *Phajus* named *Owenianus*, the result of crossing *P. Oweniæ*, a variety of the Cingalese *P. bicolor*, with *P. Humblotii*, was another of Messrs. F. Sander & Co.'s exhibits, and a most lovely plant it is, its elegant flowers of a rich plum color. If its constitution is as good as that of *P. Cooksoni* it will deserve to rank with it as a hybrid of first-rate excellence. Another *Sanderian* hybrid, this time a *Lælio-Cattleya* named *FredERIC Boyle*, is a cross between *L. anceps* and *C. Trianæ*. It is more interesting from its origin than on account of any peculiar beauty it possesses. The parents are both to be seen in the hybrid, but the blend is not what I should call a happy one. Its flowers are whitish and rose-purple. A trophy-like specimen of *Oncidium ampliatus* was a prominent feature in the St. Albans group; it was a mass of arching spikes; it is said there were altogether about 5,000 open yellow flowers upon it. I also noted *Thunia Brymeriana*, *Sobralia Keinastiana*, *Phalænopsis Youngiana*, the beautiful hybrid *Lælio-Cattleya Phoebe*, recently noted in GARDEN AND FOREST, besides many other grand Orchids in the group sent by Messrs. F. Sander & Co. Sir Trevor Lawrence showed a very fine collection, worthy of his

name and garden, and no plant attracted more attention than the little hairy-flowered *Bulbophyllum barbigerum*, which moved up and down as if alive. I also noted in his group a plant of the new *Stauroopsis Massaiana*, recently introduced by Messrs. Linden. It is only a small-flowered form of *S. lissochiloides*, of which *Stauroopsis* or *Vanda Batemannii* is a synonym. *Cypripedium Sanderianum*, *Vanda teres* and some grand varieties of *Cattleya Mossiæ* were other noteworthy plants among the Orchids.

Next in interest to these came the hardy plants, of which there were numerous large collections from all the leading nurserymen who pay exclusive attention to this class of plants. Clematis were represented by a group of magnificent specimens from Messrs. R. Smith & Co., of Worcester, for many years the principal growers of Clematis. This exhibit represented probably the finest piece of horticulture in the show. All the plants, to the number of about thirty, were in the form of globes, three or four feet through, and from the groundwork of healthy foliage sprung the large, well-formed, handsome flowers, arranged somewhat formally, but not out of keeping with the character of the plants. Messrs. Lane, of Berkhamstead, sent a fine group of yellow and orange-colored varieties of *Azalea mollis*; the value of which, as a hardy shrub, has not yet come to be properly appreciated.

A group of hardy flowering trees, shrubs and Lilies from Messrs. J. Veitch & Sons was a beautiful picture full of interest. Magnolias, *Cytisus*, *Tabiana imbricata*, *Styrax Obassia*, *Azalea rosæflora*—quite hardy at Kew—*Philadelphus microphyllus*, *Indigofera Gerrardiana*, *Andromeda speciosa*, all represented by fine, well-flowered specimens, were mixed with *Lilium giganteum*, *L. longiflorum*, and the new *L. Alexandræ*. The latter promises to be a good garden Lily. I believe it is a hybrid of Japanese origin between *L. auratum* and *L. longiflorum*, the flowers being large and pure white.

Richardia Elliottiana was shown in fine condition by Baron Schröder. It differs from *R. Pentlandi* in having gray spotted leaves and no blotch of crimson at the base of the spathe. *Datura chlorantha*, a yellow-flowered variety of *D. arborea*, was shown by Mr. Bennett-Poë and obtained a first-class certificate. The same exhibitors sent a batch of well-grown specimens in pots of *Alstrømeria pelegina alba*, each plant two feet high and through, and covered with clusters of white flowers flushed with green. It also obtained the premier award. *Rhododendrons* were well shown by Messrs. G. Paul & Son, Cheshunt. Two hybrids, named the Duke and Duchess of York, raised at Cheshunt, from *R. Fortunei* and a seedling named *Scipio*, were awarded first-class certificates; they have the foliage and habit of *R. Fortunei* and large, loose trusses of large, rose-pink flowers. *Begonias*, *Pelargoniums*, *Gloxinias*, *Streptocarpuses*, *Calceolarias*, *Leschenaultias*, *Boronias*, *Caladiums*, Ferns and Roses were shown in large quantities and teemed with interest for the specialist as well as with delight to the eye of the ordinary visitor.

The International Horticultural Company, Brussels (Messrs. Linden), sent a collection of miniature Tree-ferns from Brazil. They are remarkable for the thinness and elegance of their stems, and if they retain their character under cultivation they will be useful. They were named *Hemitelia Lindeni*, *Cyathea Mastersiana*, *C. pygmæa* and *Alsophila Marshalliana*, and they were all awarded first-class certificates. A variegated *Adiantum*, named *Claesianum*, in the way of *A. Peruvianum*, and some ornamental-leaved *Begonias* were other exhibits from the Brussels nursery. Forms of *Maranta Massangeana*, shown by Messrs. Linden, are really only varieties of the variable *M. bicolor*, which includes various other so-called species of *Maranta* and *Calathea*.

Two plants which won general admiration were *Rose Crimson Rambler* and *Carnation Uriah Pike*; these are of that character that is certain to make them in large demand for some time to come. Messrs. F. Sander & Co. sent a group of their new plants of last year, and



Fig. 40.—An Avenue of Lebbeck Trees in Egypt.—See page 232.

also *Bougainvillea glabra* Sanderiana and *Heliconia illustris*. The last named is a stove-plant of brilliant color, probably not a *Heliconia*, although, perhaps, related to it; it has hastate leaves with sheathing bases, the color of which is bright rose-red.

As a whole the exhibition may be taken as fully representing the strength of horticulture in England, and the great variety and cultural excellence shown by the exhibits is probably equal to anything ever seen here. Fifty years ago Orchids and herbaceous plants counted for comparatively little in England; now they are pre-eminently first in the attention they receive.

London.

W. Watson.

Cultural Department.

Notes on Trees and Shrubs.

AMONG the numerous species of wild Roses in the collection of the Arboretum the earliest to flower this season was *Rosa acicularis*, whose first buds were expanded on the 14th of May. Last season the same plant produced its first flowers on May 25th, in 1892 about the same date, in 1891 about May 21st, in 1890 on the 26th, and in 1889 on the 16th of May. These data show pretty fairly the relative advancement of the seasons in the different years at that particular time, although hot or cool weather before or after a special time may hasten or retard vegetable growth, so that earliness or lateness in flowering is not uniform throughout the spring and early summer when compared with other years and starting from a given date.

The *Rosa acicularis* in cultivation is a native of northern Europe, for although the same species is native in parts of our own country, the American form does not appear to have been brought into general cultivation from its native haunts. *R. acicularis* has all the qualities of fragrance, size and rosy color of blossom which we usually associate with wild Roses, our indigenous local species being just as beautiful and attractive and only lacking the one merit of extreme earliness. The stems are prickly and attain a height of five or six feet or more; they are likely to spread by underground suckers.

Rosa alpina, another European species, is but a day or two later in flowering than the earliest *R. acicularis*, and has the recommendation of being almost or quite without prickles or bristles. In other respects it is very much like *R. acicularis*, except that it does not grow quite so tall, and it might well be substituted for it. It is considered as one of the parents of the old-fashioned climbing Boursault Roses, and several other double or half-double forms have been produced from it.

After these two species of Roses it is not easy to say which Rose has precedence in the order of flowering. The first native New England species to produce blossoms is *Rosa blanda*, which here opens its first flowers ten or twelve days later than the earliest *R. acicularis*. In cultivation the plant will grow two or three feet high. It usually bears few, or sometimes no prickles, and the blossoms average a good deal larger than those of the first species mentioned; the rosy color of the petals is often marked by numerous narrow light-colored streaks or blotches. Before this species begins to flower, however, some of the little Scotch or Burnet Roses, varieties of *R. spinosissima*, have become quite conspicuous with bloom, the earliest being not many days behind *R. acicularis*. These, although single, can hardly be considered simply wild Roses, as they have generally been somewhat modified by cultivation. The usual color is white or pale yellowish white, and the size of the flower varies with different individual plants. A specimen received from Kew under the name of *Rosa grandiflora* has large pale yellow flowers which measure quite three inches across. The name *grandiflora*, however, does not properly belong to it, as it appears to be nothing more than a tall-growing, vigorous and large-flowering variety of the Scotch Rose known to some rosarians as *R. spinosissima altaica*. A very pretty and early variety received from Kew as *R. spinosissima pusilla* has large single pale rosy colored blossoms, and is one of the best of those in which red or rosy colors appear.

Lonicera Korolkowii, which was first described and figured in the current volume of *GARDEN AND FOREST* (page 34, fig. 4), is just now, in the first days of June, in its fullest and best bloom, and it is at once the most distinct and attractive of all the Bush Honeysuckles at this time, when most of the flowers of the common Tartarian Honeysuckles have faded. The flowers, though small, are produced

in great profusion. They are not so strongly fragrant as those of the Tartarian Honeysuckles, the odor being rather faint and delicate. The little plant received in 1881 is now ten feet high, spreads widely, and is well covered with small grayish foliage, which gives the whole plant a glaucous or cinerous aspect. It is a shrub well worth a place in any collection. The fruit has not yet been produced in abundance. It is very small, bright red, and is greedily eaten by birds as soon as ripe. This species may be readily propagated by cuttings of the mature wood.

Arnold Arboretum:

J. G. Jack.

The Rock-garden in June.

THE rock-garden is less bright now than during May, but is still full of color. The showy patches of *Phlox subulata* are nearly all out of bloom; only one remains in full beauty, and this is a chance seedling. It is a blue variety, somewhat resembling Sadie, but with more compact habit and full round flowers. Rocky Mountain Columbines, in blue and white, among yellow and orange Iceland Poppies, make a harmonious color-scheme, as do blue *Globularias* and crimson Fire Pinks in one place, and Fire Pinks and the blue Alpine Bugles, *Ajuga Genevensis*, in another. This Fire Pink (*Silene Virginica*) was sent here a few years ago from Virginia, and is well established. It is not obtrusive, and there can scarcely be too many of such strikingly beautiful plants.

Rock Roses (*Helianthemum*), in shades of orange, red and white, are interesting and beautiful when planted where they droop over a ledge. The imported plants do not do so well as acclimatized seedlings, several of which have settled themselves here. *Phyteumas* are pretty and distinct members of the Bellflower family; their flowers are arranged more or less in heads, sometimes oblong, sometimes round, nearly always blue, and seldom white. *P. Charmellii* and *P. orbiculare* are among the best varieties. *Myosotis rupicola*, a gem among alpine Forget-me-nots, is scarcely three inches high; *Linaria alpina* is another diminutive plant, a distinct and pretty member of the Toad Flax family, with glaucous foliage, and blue flowers with an orange throat. *Soldanella alpina*, a delicate but lovely little member of the Primula family, has struggled along for three or four years, and its location has been changed several times; it now seems to have found congenial quarters, and is giving us a few flowers this year for the first time. It is planted on the north side of a large stone, which shades it from the midday sun. Beside this is another gem of the season, the rare *Ramondia Pyrenaica*, also now in bloom. Though easily enough grown in pots, it is hard to establish when planted out. Plenty of moisture is required and good drainage is necessary. *Potentilla tridentata* is perfectly at home in a cleft of rocks, and its dark green, shining foliage and white star-like flowers are very effective. Alpine Poppies in red, white and yellow shades, though delicate, are becoming more hardy, but I strongly suspect, by the appearance of several seedlings, that there is an infusion of *Papaver nudicaule*, the yellow Iceland Poppy.

Phlox repens, dwarf, deep rose flowered, and *P. divaricata*, slightly taller, in shades of blue and white, are growing together and do well. These follow the Moss Pinks, and, though not so bright, are still a very effective species. *Aster alpinus speciosus* is by far the best of several varieties of the alpine Aster. The flowers are solitary, three inches across, on stems six inches high and bright rose color. Seeds of this fine new variety were sent to me by Mr. Robert Cameron, of Cambridge Botanic Garden, where they were received from St. Petersburg, having been collected in central Asia. I have raised several hundred of these plants from seeds collected last autumn. It is easy of cultivation, and should soon be abundant.

The yellow Globe-flowers (*Trollius*) have a stately beauty and effectiveness among lesser plants, and give variety to the garden. So, also, do Oriental Poppies, of which we have now several charming varieties, and the long leafless scapes of the American Cowslip, *Dodecatheon medea*, with large heads of pendulous lilac flowers, reflexed in the same way as the Cyclamen, these two genera belonging to the same natural order.

Other noteworthy plants in bloom are *Saxifraga Wallacei*, a fine tufted variety with white flowers; *Gypsophila repens*, in dense sheets of white; *Heuchera sanguinea*, with long, slender scapes of coral-red flowers; *Armeria vulgaris*, *Lauchena*, the best of all the Sea Pinks, and always a favorite; *Geranium sanguineum*, a perennial bloomer; *Saponaria ocymoides*, with beautiful flesh-colored flowers, but liable to be weedy; *Astragalus Monspessulanus*, a rose-flowered milk Vetch, always in bloom. *Gentiana acaulis* still gives us a few flowers, and will be succeeded soon by *G. cruciata*, less beautiful, but hardier. *Viola cornuta*, in blue, yellow and white varieties, will con-

tinue to give us flowers until autumn, and so will *Campanula Carpathica* in many forms and varieties of color.

Wellesley, Mass.

T. D. Hatfield.

A Few Neglected Hardy Plants.

IRIS PSEUDACORUS is an Iris which I am most often asked to name. It always makes an impression, more especially when grown by the margins of water, where it is perfectly at home and in entire harmony with its surroundings. It, however, grows freely in drier situations, and is a good garden Iris. The leaves are dark green, sword-shaped, about two feet long, and the flowers are borne above these. The flowers are a rich, deep, but bright yellow, and the signal is a darker yellow, with brown linings. The falls are spoon-shaped and suddenly narrowed to the claw. The standards are small. The plant is free-flowering and very effective. The variety with variegated leaves, striped white, is also in flower. It is an ornamental plant, but I prefer the green-leaved form.

Iris Boissieri is a bulbous species found in Spain in the Gerez Mountains, and differs entirely from the so-called Spanish Irises of gardens. The leaves are linear, much channeled, and ribbed on the outside; they show above ground in the early year. I. Boissieri flowers at the height of twelve inches. The flower is very handsome, with reddish purple styles of a metallic shade and rich violet-purple rounded oval falls. The claw is marked with a brilliant yellow keel quite to the base, on which are many hairs, which, however, do not form a beard. I am in some doubt as to the reliability of this Iris, as my first stock disappeared after two years. The present plants seem sturdy enough, but are in a less exposed situation.

Garden notes would be much more effective if one were handy with the pencil and could sketch some of the charming plants to which neither the camera nor words can do justice. A photo-print is usually a mere parody to a plant fancier who has the feeling to discern the differing phases of beauty of each plant as it progresses in its life. Only a deft human hand could translate these phases for others in a picture. This is especially true of many dainty little plants which are often neglected for the more showy ones; for instance, the California Dog-tooth Violets. These *Erythroniums* are all most charming plants, most difficult to describe with less than a color-sketch. The half-dozen or more varieties are distinct with variations very marked to the eye, yet elusive to the pen. They have been noted often in GARDEN AND FOREST, and should be found in all gardens. The little Mouse Ear *Cerastium Biebersteinii* is now a dense mat of silvery foliage, above which are numerous little white bell-shaped flowers about half an inch wide on delicate stems.

Quite different in effect is another mat of dark green leaves close to the ground, and covered with dark blue minute flowers, *Veronica cerceoides*; this is earlier than *V. rupestris*, which has a similar habit, but is later in flowering. The Sand-worts also make pretty mats, with narrow grass-like foliage and small white flowers. *Arenaria aculeata* and *A. verna*, var. *cæspitosa*, are good varieties of these. *Thymus montanus*, again, is different in effect, with grayish woolly leaves. The small *Saxifragas* are a host of which I have noted a few earlier in the season. The *Sempervivums* also make mats of rosettes of more or less beauty, but do not compare in effectiveness with the small *Sedums*, of which there are many that are effective in themselves and useful over some bulbs in hiding the bare earth. They do especially well in dry places. Some good species are *S. dasyphyllum*, with fine glaucous blue foliage; *S. Meehiani* has fine dark green foliage, and is much superior to *S. acre*; *S. Nevii* has rosette-like leaves of a dull green. The southern *S. ternatum* is now covered with white flowers. *S. Middendorffianum* has narrow leaves, usually dark red. The more showy prostrate plants, as the hardy Candy-tufts, the *Aubrietias*, the hardy *Alyssums*, the *Phloxes* and the *Thymes*, are most interesting plants, useful in many places in the garden, and are very attractive.

Elizabeth, N. J.

J. N. Gerard.

Carnation Notes.

CARNATION-PLANTS still flowering on the benches will be benefited by a mulching of fine well-decayed manure. Before putting it on, the surface-soil should be slightly loosened, and the plants which have fallen over tied up. A thorough soaking of water should be given after applying the top-dressing, and good effects will soon be observed. The plants need abundant watering from this time, and some stimulant may be given once a week. A sharp watch must be

kept for red spider, which is the most destructive foe during the summer months, and the plants should be well syringed at least once on every bright day. Some Carnations, such as *Grace Wilder*, *Daybreak* and *Edna Craig*, are more susceptible to the attacks of spider than others, and if the pest once gets a good foot-hold the plants may as well be pulled out. Nearly all kinds of Carnations are now showing a heavy crop of bloom, and it will pay to give them careful treatment until the beginning of July, when early propagated plants will be flowering outdoors; if necessary, however, Carnations grown under glass can be carried along until the end of August.

Plants for summer blooming and for housing next winter should all be planted out by this time. Those intended for early flowers ought not to be stopped after the end of May. Some cultivators do not know how to stop the plants, and I have seen men who grow Carnations in large quantities go over the plants and snip the ends of the shoots with a pair of scissors. It is needless to say that this sort of stopping is worthless, as in nine cases out of ten the tops are not removed at all. The proper way is to hold the shoot which requires stopping with one hand, and draw out the top with the other. It is well to look over the plants once a week, as runaway shoots have a weakening effect on them. If any particular kind shows rust badly it should be pulled up and burned, for no remedy will cure the disease without killing the plants, and it is not wise to endanger the health of the whole stock for the sake of one kind, however good it may be.

The two new pink Carnations, *Ada Byron* and *Nicholson*, promise to be good summer bloomers here. I recently saw a magnificent lot of these two varieties at their home in Framingham. The plants were a perfect thicket of flower-spikes and the flowers of excellent quality. Mr. Nicholson informed me that he could not grow enough of the flowers to supply the demand. *Ferdinand Mangold*, in another house at Framingham, had stems two to three feet long. This is still the best crimson variety, although the new variety, *Jacqueminot*, sent out by *Peter Fisher & Co.*, *Ellis, Massachusetts*, will, no doubt, win favor. A reliable white Carnation is still wanted. Mrs. Fisher is a fine summer bloomer, and an equally good one in winter in some places, but it has a weak stem, comes colored in winter, bursts the calyx and dies out badly. *Silver Spray* has a fine stiff stem, but is so badly diseased as to be worthless. *Puritan* does not bloom freely enough, and the flowers are not of sufficient size and texture. *Lizzie McGowan* is a very free bloomer, has a fairly good stem, and does not burst very much, but it is not by any means rust-proof, and the flowers, while pure white, reflex too much. Some of the newer introductions, such as *Storm King*, may have the necessary qualifications for an ideal white. At Framingham there was a batch of a promising white seedling of Mr. Nicholson's raising. The flowers were similar to those of *Storm King*, now being introduced by Mr. Ward, of East Moriches, New York; they were borne on stiff stems, did not burst the calyx and were of large size. Some of the last year's Carnation novelties have turned out utterly worthless, and such varieties as *Edna Craig* and *Grace Battles* are likely to be little heard of after the present season. William Scott proved the best novelty among pink colors.

It seems difficult to get any yellow Carnations to bloom profitably. *Golden Triumph*, when well grown, is splendid, but it rusts worse than any other kind I know of. *Golden Gate* is of poor color, rusts badly, and nearly every flower bursts. *Buttercup* does well only in the hands of a few. *Bouton d'Or*, sent out by *Dailledouze Brothers*, New York, and *Goldfinch*, one of Mr. F. Dorner's introductions from Lafayette, Indiana, are both promising novelties which were distributed this spring. *Helen Keller*, the new striped Carnation, which has commanded an extraordinary price in Philadelphia during the past winter, appears to have a good constitution, and is said to be free from disease so far. Striped Carnations are never so popular as self-colored ones, but in *Helen Keller*, at least a temporary success has been made.

Taunton, Mass.

W. N. Craig.

Adiantum Farleyense.—This is one of the few varieties of Ferns that do not produce spores and have to be propagated by division of the old plants; early spring is, perhaps, the best time in which to propagate, before active growth has commenced. The fronds should be cut closely from the old plants and all soil shaken from the roots. These should then be divided into as many parts as there are single crowns, and the smallest crown will grow. They should be placed in a bed of cocoa-nut fibre refuse, the crowns being barely covered with the fibre. They require gentle bottom-heat in a stove temperature, and to be kept moist. The crowns will

soon begin to throw up fronds, and when they have grown sufficiently the new plants should be placed in small pots in a mixture of two parts loam, two of leaf-mold, one of well-broken peat and one of coarse sand. As they require shifting on, less leaf-mold should be given and a little bone-meal added, but the bone-meal must be used carefully. When fully grown, *A. Farleyense* is the most elegant of all the *Adiantums*, the fronds often measuring eighteen inches to two feet in length and ten inches in width. The divisions of the fronds are deeply fringed and crisped, and the young fronds beautifully tinged with pink. It requires a stove temperature continually and is very susceptible to overwatering, but should never be allowed to become dry.

New Dorp, N. Y.

William Scott.

• Correspondence.

The Flowering of Blood-root.

To the Editor of GARDEN AND FOREST:

Sir,—I have been much interested this spring in the development of some plants of the common Blood-root (*Sanguinaria Canadensis*) which have become established in my yard. Early spring was unusually capricious, so that these plants by turns developed rapidly and shivered in the wind, or were buried in full bloom under the snow.

The single, broad and deeply lobed Blood-root leaf, up to the time of flowering, is folded tightly around the flower-stalk and refuses to release it when the solitary white flower is ready to open, so that the prisoner has to force itself out. As the petals expand and their summit rises above the leaf-fold they are obliged to beat the leaf down to make room for themselves, which they do in the course of an hour or so. It is soon found that an elongation of the flower-stem is also taking place, and the flower is soon carried entirely above the leaf, the stem making a growth of nearly two inches in the two hours that attend the opening of the flower. On the second day the leaf relaxes and expands, soon to be followed by other leaves from the root. If there is lacking any evidence of design in plant-growth the mode of flowering of the Blood-root ought to furnish it.

There is another Blood-root from North Carolina, in occasional cultivation here, which differs considerably from our own, though scarcely distinguished from it by botanists. It has a leaf of similar shape, but of a steel-gray color when young; it flowers later and has a shorter flower-stem, which does not appear to possess this power of elongation on the day of flowering. Blood-root with pink flowers is occasionally found in this vicinity.

Buffalo, N. Y.

John Chamberlin.

Orchids at Short Hills, New Jersey.

To the Editor of GARDEN AND FOREST:

Sir,—A visit to the Orchid-houses of the United States Nurseries, at Short Hills, New Jersey, is interesting at this time, when there are several thousand flowers expanded. *Odontoglossum crispum* is now at its best, and, considering how recently the plants were imported, the flowers are exceptionally good in size, form and color. It has often been argued that *O. crispum* cannot be grown as successfully here as in Europe, on account of the hot summers and dry atmosphere, but, in houses of good size and proper exposure, flowers equally good may be produced here. In the same house the brilliant colors of a fine batch of *Masdevallias*, including *M. Harryana*, *M. Veitchii* and *M. ignea*, make a pleasing contrast with the flowers of *Odontoglossum crispum*. Adjoining these a collection of choice *Miltonia vexillaria* is in flower, the exquisite colors of the flowers being suffused with a delicate silvery frost. *Oncidium cucullatum* is also well represented, and is remarkable for its many varieties, with scarcely two flowers alike.

In a house set apart for flowering Orchids hundreds of the showy and beautiful *Cattleya Mossiæ* and *C. Mossiæ Hardyana* make a wonderful display in many bright shades and colors. Scattered among the plants of *C. Mossiæ* are fine specimens of *Lælia purpurata atropurpurea*, *L. purpurata Russelliana* and other varieties of *L. purpurata* ranging in color from white to violet-rose, rich purple and yellow. There are also specimens of *Cattleya Mendeli* with numerous flower-spikes and well-defined flowers, and the beautiful *C. Schroederæ*, the quaint *C. Schilleriana* and the golden-yellow *C. citrina*. Other Orchids in flower now are the rare *Zygopetalum gramineum*, *Lycaste tetragona*, *Aerides odoratum*, *Oncidium Marshallianum*, *Dendrobium Dalhousianum*, *Epidendrum rhizophorum* and *Chysis bracteosa*.

Of *Cypripediums* there are a large number and variety in

flower, among others *C. Lawrencianum* and its albino form, the beautiful *C. Greyanum*, *C. Leucorrhodum* and *C. Brownii*, some fine plants of *C. caudatum* and the curious *Uropedium Lindeni*; also interesting forms of *C. Alnum* and *C. Lathamianum*, besides many plants of *C. superciliale*, *C. concolor*, *C. bellatulum*, *C. niveum* and the beautiful *C. tonso-villosum* and other varieties of this class.

New York.

J. E. L.

The Forest.

Mixed Oak and Beech Forests of the Spessart.—III.

FORMER TREATMENT OF THE FORESTS.

SMALLER areas of similar character are numerous, but the largest proportion of old Oak-trees are found scattered among the Beech-forest at the rate of less than, say, two trees per acre, and in these woods, as a rule, the Beech is younger than the Oak. This remarkable fact, that old Oak-trees are generally associated with Beech of younger age, is mainly due to the circumstance that the Oak has a longer life than the Beech. Besides this, however, it must be remembered that formerly more Beech was cut in certain portions of this forest than Oak. In those days, before the time of railways, when mineral coal had not yet been brought to every town and village, wood was the only fuel used, and on account of its great heating power the Beech was preferred to all other kinds. In those days roads did not exist in the Spessart, and heavy Oak-timber could only be brought away from the outskirts of the forest. In the higher and inner portions the old Oak-trees remained untouched, and their chief value was to shelter the summer grazing-grounds and to yield Oak-mast for the numerous herds of swine that were driven into them from the rich valleys around. In those days the Spessart was important, not merely on account of the Oak it contained, but to a much greater extent supplying fuel in the shape of Beech-wood. The treatment of these woods was by selection fellings, single trees being cut out here and there, as happened to be most convenient, without interrupting the canopy. Under such a system the Beech will reproduce itself readily, for Beech seedlings do not demand much light while young, but rather require shelter against sun and night frost. The Oak, on the other hand, demands much light while young; the necessary result, therefore, has been extensive thickets of Beech, without any young Oak in them. The relation between Oak and Beech is not anywhere the same. In other parts of Germany, where soil and climate are particularly favorable for the growth of the Oak, this tree holds its own in an even-aged mixture with the Beech. In the Spessart, on the other hand, the Oak is overtopped and finally killed by the Beech, wherever they grow together in thickets and have the same age.

At a later period glass factories were established in many places in the Spessart, which consumed fuel on a very large scale. Their demands could not be satisfied under the old system of selection-fellings; clear-cuttings, therefore, became the rule. From the old records it appears that in 1729 orders were issued to the effect that on all clearances a certain proportion of shelter-trees should be left to shed seed and to insure the regeneration of the fruit by self-sown seed. This was the first step toward a regular system of natural regeneration under shelter-woods, a method which, at a later period, has given excellent results. In these early days, however, it is probable that the seed-trees left standing were mostly old spreading trees, under whose shade the Beech came up well, while the Oak had no chance. As a matter of fact, there are hardly any Oak-woods in the Spessart dating from the eighteenth century. There is almost a complete break between the woods on the north-west face of the Geiersburg with Oaks dating from the middle of the seventeenth century, and a considerable area of Oak-woods in different portions of the range, now 90 to 100 years old, which date from the end of last and the commencement of the present century. Only very small plots are found here and there with Oak-trees from 100 to 150 years old. Single Oak-

trees of that age and younger are scattered in Beech-woods of the same age, but, with very rare exceptions, they have been overtopped by the Beech, the stems are lank and weak, the foliage is thin; in fact, they are living, but lingering, and, in many instances, dying proofs that the Oak has no chance against the Beech, if growing in an even-aged wood, unless the Beech in the vicinity of the Oak is cut back or lopped from the commencement. Attempts have been made of late years, in some places, to save such Oak-poles by girdling the Beeches in the vicinity. Girdled Beech-trees are weakened by the operation; their foliage gets thin, and ultimately, in four or five years' time, they die. This operation, however, has been futile; the remedy has come too late, and of the numerous Oak-poles and under-sized Oak-trees which are scattered among even-aged Beech woods, very few will attain a marketable size.

OAK-WOODS UNDERPLANTED WITH BEECH.

Of the younger Oak-woods, those in the vicinity of the "Weissenstein," in the Rothenbuch range, may be noted. Here are 690 acres in one block, completely stocked with Oak 50 to 100 years old, with a dense underwood of Beech. At an elevation of 1,500 feet, a wood in which the Oak in 1891 was ninety-eight years old, was found to contain 260 stems per acre, the mean height of the wood being seventy-five feet; trunk-diameters, breast-high, eight to ten inches, and the Beech underwood twelve to twenty feet high. In the Rhine valley, at a lower elevation (300 feet) and on richer soil, the Oak shows a more rapid growth, attaining at that age ninety feet, with a diameter of twelve to fifteen inches. The underwood of Beech in the woods last mentioned is not natural. Originally they were all nearly pure Oak-woods. When forty to fifty years old they were thinned heavily and underplanted with Beech, and in places Beech-nuts were sown to create an underwood of that tree. The object of this operation is to shelter the ground and to promote the development of the Oak. It has already been explained that thickets of pure Oak are dense enough, but at a later stage, when the trees have attained the condition of poles, the wood becomes thin and the leaf-canopy is not sufficiently dense to shade the ground. The result is that the soil dries up and the stems become branched and irregular. The foliage of the Oak not being very dense, the leaf-fall does not enrich the soil in the same way as is the case in Beech-forests. Hence the great advantage of an admixture of Beech with the Oak. By far the most favorable condition of affairs is found where Oak and Beech grow up together from the commencement, provided the Oak has a sufficient start, so as not to be overtopped by the Beech, or is protected against encroachment by lopping or cutting back the Beech. When this is the case, the soil improves steadily, the Oaks clear themselves at an early age of side-branches and form straight, tall, well-shaped stems. Where this has not been the case, in pure Oak-woods, it is necessary at a later age to introduce the Beech and to make heavy thinnings in order to enable it to grow.

SHADE-BEARING AND LIGHT-DEMANDING SPECIES.

Foresters make a distinction between trees which demand much light, such as the Oak, the Larch and the Scotch Pine, and trees which endure much shade, such as the Beech, the Hornbeam, the Silver Fir, and, to a less extent, the Spruce. The trees of the first-named class are called light-demanding, those of the second, shade-bearing. The difference between the two classes is very great and shows itself in a variety of ways. Light-demanding species are impatient of shelter while young, their foliage is light, and, as explained before, woods consisting of them get thin and open when old.

On the other hand, shade-bearing trees, such as the Beech and the Silver Fir, and to a less extent the Spruce, are tender while young, being readily killed by sun and frost. These species, however, have the great advantage

that they will spring up under shade, and although with an insufficient supply of light, they will not make much progress; still, they will maintain themselves, ready to shoot up whenever light overhead is given by the removal of shelter-trees. It follows, that wood consisting of species which stand much shade can be regenerated much more easily by self-sown seed than forests composed of Oak, Scotch Pine and other species which demand much light. Whether natural regeneration is attempted by the selection system—that is, by taking out marketable trees here and there—or by the group system, or by successive cuttings spread over considerable areas, compartments or sub-compartments, success is easy in the case of shade-bearing trees, because a slight cutting is sufficient to induce seedlings to come up; and, secondly, because the young growth will continue to live under a certain amount of shade, until subsequent cuttings give more light. Again, the foliage of shade-bearing trees is dense, improving the soil by an abundant leaf-fall. Forests consisting of these species always maintain a dense canopy of leaves.

On the other hand, trees which demand much light, such as the Oak and Scotch Pine, spring up and thrive without much shelter; they will not come up where the shelter is too heavy, their foliage is light, and pure woods of these species get thin with age, because the weaker trees do not get light enough, and perish. In such woods the soil gets exposed to sun and wind, and deteriorates. Hence the finest Oaks are found where they have grown up in company with the Beech, or with the Silver Fir, as is the case in some instructive and valuable woods on the borders of the Black Forest, near Rastatt, Baden-Baden and Stanfen. Hence the Beech has justly been called the nurse of the Oak, and the same may be said of the Silver Fir. In this respect the Scotch Pine behaves like the Oak. It nowhere attains such perfection as when it grows up in company with the Beech, as we find it in the Steiger Wald, of Bavaria, or when it is mixed with the Spruce and Silver Fir, as we find it in the Black Forest.

In India the Teak is a tree which demands much light. This tree also thrives best, forming straight, clean, tall stems, when associated with shady kinds, such as the Bamboo. And when the forests of North America come to be studied, from a forester's point of view, or rather when they come to be managed in a regular and permanently profitable manner, the treatment of the different species will have to be guided by analogous considerations.

In endeavoring to set before American readers the management of the mixed Oak and Beech forests of the Spessart, we must be prepared for the objection, that these matters may be interesting from a scientific point of view, but that they cannot possibly be of any practical utility in managing North American forests. The trees are different, the climate is different. The American forester is skillful; he is full of resource, bold and energetic. He cannot possibly be expected to have the patience to find out whether the trees of his forest are light-demanding or shade-bearing. This would take much too long, and would interfere with business. However, it may not be out of place to state here that when the writer of these lines, in 1850, discovered that Teak was a light-demanding tree, he laid the foundation for the systematic management of the Teak forests in Burma, which has proved successful on a large scale, and will be lasting. There is no help for it; if forest proprietors in the United States wish to leave to their children forest estates, the value of which will grow steadily, or if foresters, with a still higher aim, desire to confer lasting benefits upon their country by inaugurating a good system of forest-management, they must follow the example of foresters of Germany and other countries of Europe, and study the requirements of American forest-trees in the matter of light and shade. This is at the root of good forest-management in all countries.

Bonn, Germany.

D. Brandis.

Notes.

The Scotch Broom is a useful flowering shrub early in June. When planted on high well-drained land it is perfectly hardy near Philadelphia, although further north it suffers unless carefully protected in winter.

At the meeting of the Dutch Horticultural and Botanical Society of May 12th the Floral Committee awarded first-class certificates to *Iris Iparad*, described as a hybrid between *I. Iberica* and *I. paradoxa*, and to *I. Agatha*, a hybrid between *I. Iberica* and *I. Korolkowi venosa*, exhibited by C. G. van Tubigen, of Haarlem, and to Mr. P. W. Voet, of Haarlem, for *I. atrofusca* of Baker.

Among hardy Catawbiense Rhododendrons which have been produced in England in recent years none is more beautiful than *Lady Gray Egerton*, distinguished by its large, dark, lustrous leaves, good habit and great trusses of light mauve-colored flowers, which are unsurpassed in delicacy. In a selection of six of the very best hardy Catawbiense Rhododendrons for American gardens this variety must be included with *Everestianum*, *Lady Armstrong*, *Album grandiflorum*, *Caractacus* and *Charles Dickens*.

Mr. N. O. Howard, of New York, a graduate of Cornell, has been appointed entomologist of the Department of Agriculture to fill the position made vacant by the retirement of Dr. C. V. Riley. Since 1886 Mr. Howard has been the first assistant to the entomologist of the Department, and is the author of numerous memoirs published by the Department, and a joint editor of *Insect Life*, the periodical issued by the Division of Entomology. The position of first assistant, created by Mr. Howard's promotion, has been filled by the appointment of Mr. C. L. Marlatt, of Kansas.

A great branch covered with flowers of the Japanese *Viburnum tomentosum*, which was figured on page 594 of vol. iv. of this journal, was exhibited last week before the Massachusetts Horticultural Society by Mr. George Chase, of Salem, and attracted much attention. This is certainly one of the most distinct and beautiful of hardy shrubs. Of free and graceful habit, it is, as an ornamental plant, superior to its sterile offspring, familiarly known in gardens as *V. plicatum*. Although not often seen in cultivation, *V. tomentosum* may be safely planted when a tall graceful shrub is desired.

In Germany, where the white grubs of the Dor or Maybug are as destructive as they are in this country, the local authorities, when the beetles abound, give notice, we read in the *Gardeners' Chronicle*, that on a certain day every person, without exception, who possesses a garden or farm must rise early and shake and rap their trees. The school children of all the folks' schools, with their teachers, are obliged to collect the beetles which have been shaken from the trees, gratuities being paid to each child who fills a litre measure with them. The insects are killed by being put into tubs of boiling water, and are then used as manure.

Probably the prettiest floral display recently seen in New York filled the window of a florist on upper Broadway. The bottom of the window was covered with a mass of *Lycopodium*, in which were small sunken tanks filled with *Waterlilies*. Above these, at the back, leaned a fringe of *Maiden-hair Fern*, and back of this again were tall thick masses of *Mountain Laurel* in full bloom, while bunches of blue *Iris* occupied one corner of the window. The arrangement was charming in itself, and the rural ideas it suggested were in refreshing contrast to those inspired by the *Orchids*, huge *Roses* and other hot-house flowers usually seen in florists' windows.

South African fruit now finds a ready market in England, and there is every prospect that the cultivation of choice fruits and other garden produce at the Cape for the supply of European markets will soon become an important industry. Since the commencement of the fruit season, more than one hundred tons of fruit have been shipped to England; the condition of the fruit on its arrival has been very satisfactory to exporters, and the prices on the London market have been good. As things stand at present, it is cheaper and—always granting that the fruit arrives in marketable condition—pays better to ship to Covent Garden than to send to the Goldfields.

Spiræa media is a tall, erect-growing species, the first blossoms of which generally appear soon after those of *S. Thunbergii*, but hardly persist so long. The blossoms are produced in great abundance in large sessile umbels along the upper sides of the branches. The flowers, however, are of a greenish white rather than pure white color, and are, therefore, not

generally considered so attractive as some others. This is also true of the *Saint Peter's Wreath*, *S. hypericifolia*, which blossoms at the same season. The flowers of this species are much smaller and less attractive than those of *S. media*, and the foliage is small and appears scattered, so that the straggling gray stems are prominent.

Mr. J. H. Hale writes to the *Farm Journal* that while every Strawberry that is grown has some particular point of merit either in plant or fruit, he believes that if the present list of two hundred or more varieties was cut down to less than twenty, every one would be better served, and if it were not that many of the best varieties were imperfect bloomers, and needed others to go with them to furnish pollen, the list might be made still shorter. Mr. Hale's list of six varieties for market, named in the order of their ripening, would be *Leader*, *Bubach*, *Lovett*, *Windsor*, *Greenville* and *Swindle*, while for family use, to cover the longest season, he would plant *Dayton*, *Haverland*, *Princess*, *Sharpless*, *Greenville* and *Windsor*.

Among Rhododendrons now offered for sale for the first time by Anthony Waterer are *F. L. Ames*, a variety with excellent foliage and well-shaped trusses of large flowers, the white corolla being marked on the border with a broad band of pale pink, and *Mrs. C. S. Sargent*, with the habit and broad, dark, rich green leaves of *Everestianum* and bright rose-colored flowers marked with a yellow blotch. This Mr. Waterer considers one of the best Rhododendrons which have been raised at Knap Hill, where nearly all the most desirable varieties common in our gardens have been produced. These two varieties have been thoroughly tested in the Arnold Arboretum for several years before being put in commerce, and there is no question of their hardiness in this climate.

A distinct and beautiful seedling Rhododendron, called *Mrs. James Comley*, was exhibited last week in Boston by its raiser, James Comley, of Lexington, who produced it several years ago by crossing our native *Rhododendron maximum* with some variety of the Catawbiense race. It produces pale flowers, shaded with pink, and is distinctly marked on the upper lobe of the corolla with a large, yellow blotch, showing in the leaves its relationship with *Rhododendron maximum*. These hybrid offspring of *Rhododendron maximum* and *Catawbiense* varieties, of which the best known here is *Rhododendron delicatissimum*, are well suited to our climate; and the English Rhododendron raisers, who are always anxious to secure good, hardy seedlings for the American market, can well devote their attention to producing new forms of this race in which varieties with red or dark-colored flowers are still unknown. These hybrids, in addition to their hardiness, have the merit of flowering after the Catawbiense varieties are out of bloom and before the flowering time of *Rhododendron maximum*, and are therefore useful for prolonging the Rhododendron season.

In the *Orchid Review* for April some interesting particulars are given in relation to the length of the period during which one who hybridizes Orchids must wait before he reaps the reward of his labors. The *Disas* seem to be the most energetic of the different genera, and one of them, *D. Kewensis*, flowered in eighteen months from the time the seed was sown. The *Calanthes* follow, with an average period of from three to four years between seed-sowing and flowering, although the first artificial hybrid, *Calanthe Dominii*, flowered when it was only two years old. *Cypripediums*, *Selenipediums* and *Dendrobiums* follow close after *Calanthes*, and then *Masdevallias*, *Chysis* and *Phajus* crossed with *Calanthe* will require on an average from four to five years. *Zygopetalums* and *Lycastes* require more time to reach the flowering stage, and *Cattleyas* and *Lælias*, with crosses between them, average from seven to ten years, with four years as the minimum period yet recorded and nineteen years as the maximum. *Lælio-Cattleya caloglossa* enjoys the distinction of bringing up the rear. The time required for maturing the capsule after the flower is fertilized also varies considerably. *Calanthes* take from three to four months; *Masdevallias*, four; *Phalænopses*, six; *Lælia purpurata*, nine; while *Dendrobiums*, *Anguloas*, *Cypripediums* and *Cattleyas* require a year to ripen seed. Seed is usually sown as soon as ripe, and a tiny leaf may push up within five or six weeks, or it may require as many months or still longer. And yet in some cases young plants have been pricked off within two months from the date of sowing the seed. It is pretty clear that the hybridizer must be content, as a rule, to wait some years after his experiments begin before he is rewarded by the sight of a flower, but meanwhile he has the pleasure of watching the development of the minute seed, which ought to be an ample reward to the true enthusiast.

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The Cypresses of Monterey.

THE forests of Pacific North America are peculiar in the presence of several cone-bearing trees, each now confined to a small area—a remarkable fact, for Conifers are usually plants of wide distribution. At the north the Lawson's Cypress, *Chamaecyparis Lawsoniana*, the largest, stateliest and most valuable tree of its kind, occupies a few square miles of territory in the coast region of southwestern Oregon, with an outlying post or two on the head-waters of the Sacramento in northern California. The graceful *Picea Breweriana* is still known only in two or three small groves high up on the slopes of the Siskiyou Mountains, near the boundary line of Oregon and California, with only a few hundred individuals, old and young. *Abies venusta*, perhaps the most beautiful of the American Firs, occupies with a scanty growth a few of the interior valleys of the Santa Lucia Mountains of California; and *Pinus Torreyana*, the most local of Pine-trees, has only succeeded in retaining a foothold on the bluffs near the mouth of the Soledad River, in San Diego County, where it is scattered in open groves up and down the coast for a distance of five or six miles, with an outpost on the island of Santa Rosa.

But the most restricted in natural range of the American Conifers is the Monterey Cypress, *Cupressus macrocarpa*. This tree only grows spontaneously in the neighborhood of Carmel Bay, in Monterey County, California, and there are two groves; the larger stretches from Cypress Point southward to the shores of Carmel Bay, a distance of two miles; the smaller occupies Point Lobos, the southern boundary of the bay. The larger grove extends from the very edge of the sea-cliffs for about two hundred yards inland, when the trees begin gradually to mingle with the Monterey Pine, *Pinus insignis*, which on this particular part of the coast forms a large part of the forest-growth. In some portions of the grove the trees are crowded together, running up with tall stems and narrow pyramidal crowns; in others they are more scattered, displaying the flat heads of horizontal branches, which distinguish the oldest individuals. On the borders of grassy lawns scattered here

and there through this grove are many noble single specimens; and on the very edge of the cliffs trees gnarled, twisted and dwarfed by centuries of conflict with the fierce winds, laden with saline moisture, that sweep in from the Pacific, show with what tenacity this tree has struggled to preserve its last foothold. But it is hardly possible to conceive that a tree of such vigorous constitution did not at some earlier period occupy a larger territory, or that it has not been driven to this inhospitable shore by the gradual drying of the California climate which followed the disappearance of the great glaciers of the Sierras, or by the direct action of fire in comparatively recent times, as Mr. John Muir, the most careful and experienced student of the changes of forest-conditions in California, suggests. The adaptability of the Monterey Cypress when transplanted by man to flourish in climates very unlike that of its present home seems to confirm this view.

Discovered less than fifty years ago by the German collector Hartweg, *Cupressus macrocarpa* was soon carried into the gardens of Europe, where in all temperate countries it grows with extraordinary rapidity and vigor; and now on the Pacific coast, from Victoria, in Vancouver's Island, to San Diego, it is everywhere the most universally planted coniferous tree, growing apparently in all climates, soils and exposures as freely as the young trees in the groves of Carmel Bay.

The peculiar habit, with their great gnarled, spreading branches, which the old trees assume in their home when they have stood without the immediate protection of companions is shown in the illustration on page 245 of this issue. No picture, however, can fully display the picturesqueness of these venerable trees or do justice to the whiteness of their bark or the dark green of the foliage that covers their ancient crowns; and no one who has not wandered through this grove on a sunny day in early spring can obtain from any picture or from any written words an idea of its beauty. Nowhere else on the shores of this continent, at least, can a picture of such unsurpassed beauty be seen or such a combination of bold, dark red, ragged cliffs, perpetually bathed in the spray of mighty breakers, of skies of the brightest blue and lawns clothed with grass of the tenderest green and studded with flowers of many brilliant hues, while above them the white trunks, sometimes twisted into a thousand curious shapes, sometimes straight and shaft-like, rise on all sides and spread their dark and sombre canopy.

Tens of millions of young plants of *Cupressus macrocarpa* planted in British Columbia, Oregon and California, in the countries bordering the Mediterranean and in western Europe, in Australia and New Zealand, will insure the preservation of the species; but its last natural stronghold should be jealously guarded, for Cypress Point is one of the most interesting spots in the world to the lover of trees; and there are few places in any country which so stir the lover of nature. One bad fire would sweep away every Cypress-tree in either of the two groves, and the animals, which are now allowed to browse at will and in large numbers in the larger grove, destroy all seedlings as they spring up, and, by impoverishing the soil, hasten the decay of the older trees. Self-interest on the part of the men who now own this grove and use it as the chief attraction to the guests of the hotel at Monterey will make them anxious to prevent fires, although apparently they have not established any system of fire-guards. The same interest ought to induce them to prevent its injury and devastation by bands of cattle.

Architecture and Vines.

A PROPOSAL that the public buildings of this city should be ornamented with the Japanese Ivy, *Ampelopsis tricuspidata*, seems to have been favorably entertained by the officials who have the responsibility of decision, and has been promptly endorsed by the newspapers. There can be no doubt that, if discretion is shown

in this matter, the aspect of our city may thus be greatly improved, but discretion is always needful when a combination of architecture and of plants is in question, and the many attractive qualities of the Japanese Ivy should put us on our guard against its excessive use. It grows very quickly, thrives with little soil and in an urban atmosphere. It is free from insects, and while it clings so closely to the walls as to form an impenetrable shield against rain, it neither harbors dampness nor injures the solidity of a brick or stone surface. Nor is its deciduous habit altogether a defect. In winter the tracery of its leafless branches upon a background of gray stone has a delicate beauty of its own, and in the spring the gradual transformation of this exquisite gray net-work to a beautiful drapery of green gives an ephemeral charm to this vine which is lacking in the constant evergreen. Nevertheless, we cannot agree with the writer who recently declared that "nothing can be more pleasant to the eye than a house-front enswathed in the rich greenness of this plant, and the more it is used on our public and private buildings the better."

It should be remembered that in any combination of architecture and foliage the structure itself is the important element. Foliage should be its decoration, its garment, but not its shroud. It should be draped in green, but not enswathed in it. And thus the luxurious growth of the Japanese Ivy renders it in one sense our most dangerous creeper, for, unless closely watched, it will soon cover the building so completely as to obliterate all details of ornament, and even mar the clearness of its outline, thus forcing upon the mind the impression that the sole purpose of the architect had been to produce a frame-work which should support this mass of living green. We see an example of this in Grace Church. The effect of this structure was greatly improved by the planting of Japanese Ivy about it, but upon some portions the Ivy has been permitted to grow so luxuriantly that they look now, not like stones draped with vines, but like actual walls and pinnacles of leaves, and though this effect may attract and amuse the careless observer, it can give no pleasure to a cultivated taste.

It is fortunate for the effect of the reservoir on Fifth Avenue that its long walls were planted with Wistarias before Japanese Ivy became popular, and that these are not allowed to grow above a certain height. If the whole structure were covered with such a green shroud as swathes its central pavilion we should see simply a rectangular mass of green instead of a dignified building richly draped with foliage; and, besides the loss of form and detail, and the apparent loss of stability which would result from such treatment, there would be also a loss in beauty of color, for the Japanese Ivy displays its full beauty only when its many summer shades of green or its rich autumn tints are shown against the background of soft gray stone.

Moreover, various kinds of buildings differ greatly as regards the amount of foliage that may rightly be trained against their walls. Irregular or elaborately featured buildings, modeled after the romantic styles of architecture, may be more profusely draped than the very symmetrical or severe ones which represent the classical styles. We realize this when we think how the beauty of a ruined abbey in England is enhanced by a thick growth of Ivy, but how greatly the beauty of the ruins of the Parthenon would be decreased by a growth of the same sort. When a building is as severe in architectural expression as our pseudo-Egyptian Tombs, or when it is associated with such ideas as attach to the Tombs, any planting of vines against it would, perhaps, be a mistake. The Jefferson Market likewise contains a prison, but its name does not convey so grim a meaning to the ear, and the fact that it exhibits an ornate gothic style would justify some adornment with vines. But it is a question whether any such adornment would be advantageous in the case of the City Hall, the beauty of which resides in its symmetrical dignity and the perfect proportion of its parts. Certainly, if

it is to receive any decoration of this kind, the work should be done with the utmost discretion, and the foliage should not be allowed to grow above its basement story. On the Post Office vines would be distinctly out of place, both because of the position of the building and of its architectural character. A drapery of vines would be so out of keeping with its solid and formal aspect that it would intensify rather than conceal its lack of architectural excellence.

An artist in planting would find it of much interest thus to pass in review all the public buildings of our city and decide where a garment of foliage would be an improvement, just how large a quantity would be desirable in each case, and how it should be disposed. But enough has been said, we think, to show that an artist's eye is needed, not only to regulate the initial plantings of vines or creepers, but to control their aftergrowth. The same considerations apply, of course, to domestic buildings. Among these we find so few that have any real beauty of architecture that their "enswathing" in green would displease the eye only by reason of the general fact that a solid wall of green simulating architectural forms is an offense against good taste. But the better a house is the less should it be enclosed with vines. We should be sorry, for example, if the white Vanderbilt house on Fifth Avenue were wholly hidden from view during half the year by even the most beautiful growth of Japanese Ivy; and it would be a worse mistake to swathe the Lenox Library wholly in foliage, for greater care is needed with public than with private buildings, and in general the more monumental a structure the less appropriate is an overplus of green drapery.

Pacific Coast Seedling Fruits

HORTICULTURISTS on the Pacific Coast are rapidly supplying themselves with new varieties of fruits adapted to local requirements. It is probable that all the standard Peaches, Almonds and Apricots of to-day, and many of the standard sorts of other fruits, will in time be discarded, and that names now familiar to every producer and consumer will in a few years be known only in the history of pomology. To illustrate the extent to which seedling fruits are now being propagated, I have compiled these notes from personal correspondence and from local catalogues. The list is, however, far from being complete.

Among the more famous seedling Apples Marshall's Red takes high rank. This bears a large, deep-red winter apple of fine quality. Sonoma, a red-striped winter apple, and Santa Clara King, a yellow autumn variety, are both of California origin. Palouse is a choice winter apple from Washington, and is being extensively planted. Violet, a new red winter apple from Ione, Amador County, California, has been widely propagated; it compares in size with the Gloria Mundi.

Humboldt, Trinity and Siskiyou counties have old Apple-orchards grown from seed, and varieties of local reputation are being disseminated. As an illustration of the possibility in this class of fruits, as of other classes, I venture to give a recent experience of my own. On December 12th, 1892, returning from a visit to Mount Hamilton, the stage stopped at Hall Valley, a small, rich mountain-basin about two thousand feet above the ocean. Professor Barnard, who happened to be on the same stage, called my attention to a seedling Apple declared to be the best in the neighborhood, and grafts of this Apple, known as the "Brakefield," were obtained. Its parentage is Golden Pippin, but it is more evenly round, more solid and larger than the parent, and well striped with red, and of first-rate quality. The seed was planted by an old Cherokee woman some thirty years ago. The fruit of this Apple is preferred by some of the professors of the Lick Observatory to any of the standard sorts. The growth of the tree is something like that of Limber Twig.

Californians are planting extensively several seedling

Apricots, chiefly of the Royal or the Hemskirke types. Newcastle Early, Gooley and Smith's Triumph are all representative varieties; these resemble the Royal, but are earlier and better in many respects. Flickinger is a Hemskirke seedling, now being planted in the Apricot districts. Several coming seedlings not yet named are of the Moorpark type, and are said to bear much better. The Peach Apricot is represented by three or four distinct strains. Apricot-growers desire a highly flavored, richly colored fruit that will bear well and evenly, and there are indications that many new varieties will soon come into the markets. During the past year seedling Apricots have been sent to the Experiment Station from almost every fruit-district in California.

The seedling Almonds, now planted in large orchards in California, are largely from the nurseries of Mr. Hatch, of Suisun. His I. X. L., Nonpareil and Ne Plus Ultra are all good bearers, and the fruit is excellent. The Commercial is a Tulare County seedling. Golden State comes from Yolo. Lewelling's Prolific originated in Napa. California seedling Almonds are now being planted much more extensively than the imported varieties, as they bear better and are more profitable. It is also remarkable that the proportion of hull and shell to the weight of kernel is much greater in the standard European sorts, such as the Languedoc, than in the new California seedlings.

The era of new seedling Cherries began a few years ago with the Centennial, a seedling of the Royal Ann (Napoleon Bigarreau); the Thompson seedling, resembling Black Tartarian, and the Oregon, a fine large late cherry. Other seedlings are appearing, such as Chapman, Purity and California Advance. The veteran horticulturist, Seth Lewelling, of Milwaukie, Oregon, who first carried fruit-trees across the continent, originated a new Cherry, the Bing, which has been extensively planted in Oregon, and is being introduced into California.

Californians are originating many new varieties of Peaches, and the Oregonians, considering their lesser acreage, are doing nearly as well. In the Hale's Early class, Oregon has probably made an advance with S. G. French and Early Charlotte. Stilson is a large yellow freestone two weeks later than Late Crawford, very popular with the canners. Jones's Seedling is of a similar type, but earlier. California Cling, Austin Cling and Day's Cling are all very large, solid and showy seedlings of the Orange Cling type. George's Late and Winters are fine new seedlings of the Heath Peach. In the department of Cling Peaches five sorts out of six now planted are likely to be California seedlings; in other departments, also, the large orchards are chiefly planted with seedling sorts. Muir, for instance, a Vacaville seedling, is now the most popular yellow sort among orchardists. It is beginning to be difficult to keep track of the new Peaches, even in test-orchards. Many kinds show but little variation from the older sorts, and a more rigorous discarding of second-rate varieties is necessary.

There are many new California seedling Pears of promise. Santa Ana, a large bright golden russet Pear, said to be equal to the Winter Nelis in flavor, is being planted largely. It is a late-keeper. I have seen two Humboldt County seedlings, as yet unnamed, that are among the very largest of California Pears, and they seem to be worth trying. The Fox seedlings are now standard sorts.

Napa Valley has produced the famous Clyman Plum, a seedling of the Peach Plum, but the fruit is much finer, and equal to the best for shipping to distant markets. A promising Stanislaus County seedling is Uncle Ben, which produces a large late yellow plum that will keep in good condition until near Christmas.

In the Prune class, Oregon growers now send out a new prune called the Golden, a seedling from the Fellenberg, a very large fruit of the finest quality, also the Oregon and the Champion, both untested in orchards in California. Ruby is a new Lake County, California, Prune of dark red color, and Elmore, lately produced in Shasta, is a very early

Prune, a Sacramento Valley seedling. Tennant is a new and highly praised Prune from the state of Washington.

The best table Grape yet originated in California is an Isabella sport from Santa Clara, known for some years as Isabella Regia, but now classified as the Pierce. It has probably the largest berry of any grape of the American type, and the vigor of the plant is remarkable. It is worthy of general introduction wherever its parent, the Isabella, is hardy. A large grape from Yuba of the Flame Tokay type is coming into notice. It is called the Bishop.

In Walnuts, besides the Santa Barbara soft-shell Walnuts, well known in the warm coast valleys, there are now several new sorts originated in the Sierras by Mr. Felix Gillett. One is the Mayette-shaped Proporturiens; another the Cluster Proporturiens, and a third the California Chaberte. Mr. Gillett's collection of Walnuts in bearing comprises twenty imported varieties.

Strawberries, Gooseberries, Currants and Blackberries are well represented by desirable Pacific Coast seedlings, but the list is already so long that I hesitate to continue. In every department of horticulture the last few years have shown great gains. For every seedling fruit that is being introduced there are a dozen or more that are still being tested. It is interesting to note that many fruit-growers find profit in seedlings. They plant them in orchards before the general public is allowed to know of their existence, and sell exclusive rights to nurserymen. The nurserymen themselves are trying to produce new kinds. Some of them have found it to their advantage to search through the old seedling orchards of the mining period, where many valuable new sorts have already been discovered. The scientific hybridizer finds peculiarly favorable opportunities for his work in the orchard districts of the Pacific coast from San Diego to Puget Sound.

Berkeley, Calif.

Charles H. Shinn.

Early June in the Pines.

THE finest display of flowering plants in the Pines is in early June, when the Laurel, *Kalmia latifolia*, is a mass of brilliant bloom varying in color from rose-pink to pure white. The Magnolia, too, is then in flower and fills the air with its heavy fragrance, and in many places the Laurel is as tall as the Magnolia. The beautiful effect of the natural massing of handsome trees and shrubs in the damp Pines cannot easily be described. The Fringe-tree, *Chionanthus Virginica*, still shows its graceful white blossoms, though not as fully as in May. The large, nodding clusters of the Stagger-bush, *Andromeda Marianna*, are at their best, as are also the panicles of *A. ligustrina*. The Dwarf Huckleberry, *Gaylussacia dumosa*, with bell-shaped, white flowers, is common in the damp Pines in company with the low Laurel, *Kalmia angustifolia*, which has rich clusters of deep rose-purple flowers.

Xerophyllum setifolium is showy and attractive now. Some of the larger plants bear from five to ten stately flower-scapes surmounted with a compact raceme of white flowers which rise from a wealth of vivid green, long, grass-like leaves. *Medeola Virginica* is also an interesting plant, though not showy. It has a whorl of leaves about half-way up the stem, and is surmounted by a smaller whorl and an umbel of small recurved, lily-like flowers. On pulling the plant up by the roots a strong odor of cucumber is detected, from which it takes its common name of Cucumber-root. Another plant in the Lily family is the handsome *Amianthium muscætoxicum*, just coming into bloom. Among many other beautiful herbaceous plants now in flower is *Arethusa bulbosa*, one of our most charming Orchids, which began to bloom in May, and good specimens of its bright rose-purple flowers may still be found. *Pipsissewa*, *Chimaphila umbellata* and Spotted Wintergreen, *C. maculata*, show the first of their fragrant, wax-looking flowers. *Schwalbea Americana* is now in flower—a downy plant, in touch, like the softest velvet. The flowers are purple and yellow, about an inch in

length, and are borne on a long spike. The stems are straight and simple and very leafy. The lower leaves are two inches or more in length and are gradually reduced in size until they become small bracts at the top.

Many vines are now in blossom, with inconspicuous greenish flowers, but their handsome foliage and, later, the fruit will make up for lack of beauty in the flowers.

During the past month of cloudy and rainy weather the foliage has developed rapidly. I cannot recall any spring-time when there has been so much color in the leaves of certain trees, shrubs and herbaceous plants as there is now. The chlorophyll has not developed as fast as the leaves have grown, and the result is that the tender foliage exhibits the color of mature leaves in all shades of red, pink and purple; but a few days of sunshine will give them their green color.

At this season the birds in the Pines often lure us from the flowers. The manners of the catbirds, the thrushes and the song and vesper sparrows that live in the Pines are very different from those of the civilized birds that live in our gardens and on our lawns. Some of these wild birds make much ado over our presence on their domain, while others, like the quail and snipe, keep perfectly quiet and try to deceive us, at times even feigning death. On the margin of a swamp I was attracted by the mottled appearance of something on a bed of green moss. Upon a nearer approach I thought it a lifeless bird, and as I brought my hand down to take it up, it startled me by flying almost into my face, and then half-flying, rolling and tumbling away, as if badly wounded; it was evidently trying to lure me in pursuit of itself, uttering meanwhile not a sound. It was somewhat larger than a quail, a Wilson's snipe, *Gallinago Wilsonii*, and was brooding four young ones not yet old enough to skulk and hide. As the mother hurriedly rose in her precipitate flight she overturned two of the brood and left them lying flat on their backs. And how dead they all were, except their bright eyes! Their long bills were hugged close to their breasts, and their dark-colored long legs were drawn close to their bodies. I called the botanical hunters to come and see the little frauds simulate death, and we stood around them laughing and talking, but they were equal to the trying ordeal, and did not move a muscle, though they watched us closely with their shining eyes. We left them and returned in about half an hour. The mother was still near by in the bushes trying to attract our attention to herself. The young ones were in the same positions as before, with the exception that one of them had straightened out a leg which looked stiff and rigid. We were all too kindly disposed to touch the little things, and left them on their bed of moss as we had found them.

Vinceland, N. J.

Mary Treal.

Foreign Correspondence.

London Letter.

NEW PLANTS.—A sale of a somewhat novel character took place to-day at the auction-rooms of Messrs. Protheroe & Morris, who offered the entire stocks of thirty of Messrs. Lindens' new plants which have not yet been sent out. It is usual for such establishments as the famous Brussels Nurseries, over which the Messrs. Linden preside, to jealously watch over all such new plants and to distribute them, partly for the honor and glory of the thing. The reason given for this new departure is that Messrs. Linden, having no room for propagating on a large scale their new introductions of fine foliage-plants (their houses being occupied by extensive importations of Orchids), have decided to sell by auction, every spring, the entire set, each in one lot, of their discoveries.

Most of their new plants are valuable for hybridizing, and many of them have received first-class certificates at the meetings and at the Temple shows of the R. H. S. A part of the plants offered in this sale were exhibited at the great Temple show, on May 23d, 24th and 25th, where

they were awarded eleven first-class certificates, a silver cup being awarded for the group. They comprised new Tree-ferns, Begonias, Marantas, Tradescantias, various Aroids, *Hæmanthus Lindeni*, etc. Evidently the auction-room has now become a much more important factor in commercial horticulture than it has ever been before.

Gmelina hystrix.—The genus *Gmelina* consists of eight species of Asiatic trees and shrubs, and is related to *Clerodendron*. *G. hystrix* is the most ornamental of them, judging by a specimen of it now flowering for the first time at Kew. It has a stout, woody stem, with long, slender Bougainvillea-like shoots clothed with bright green ovate or lobed leaves and bearing drooping terminal cymes of large, yellow flowers which spring from large, ovate, overlapping, brownish bracts. The corolla is tubular and divided at the top into four segments, the lowest of which is much the largest. The plant grows freely in a moist stove. According to Mr. Goldring, who brought this plant from Baroda, it is a most useful shrub in Indian gardens, and one which can be utilized there for fences, as it grows quickly and develops strong spines. A figure has been prepared from the Kew plant for publication in the *Botanical Magazine*.

Eupatorium serrulatum has lately been introduced from Brazil by Monsieur E. André, to whose energy horticulture is indebted for many new and useful plants, *Senecio sagittifolius* being one of the most recent. The *Eupatorium* has long been known to botanists as a shrub about four feet high, with ovate, serrated, hairy leaves from one to three inches long, and numerous terminal compound panicles of bright rose-purple flowers, the strongest branches producing heads six inches across. It grows as freely and flowers as profusely as any of the *Eupatoriums* already in cultivation, and, no doubt, will thrive under the same kind of treatment. For such places as the Riviera and California it will be an acquisition as a hardy shrub. Monsieur André informed Mr. Gumbleton, to whom he sent the specimens which I saw, that this plant would prove a good acquisition for his garden at Belgrove, and no one who knows Mr. Gumbleton would venture to recommend any but really good plants to him.

Polypodium Schneiderianum is said to be a hybrid between *P. aureum*—one of the best-known and largest of tropical species—and *P. vulgare*, var. *elegantissimum*, a garden form of our common wild Polypody. A fine specimen of the hybrid was shown by Messrs. J. Veitch & Sons at the Temple show last week, and I believe it originated in their nursery. It is a most graceful plant, forming a specimen a yard through, with large arching bipinnate fronds elegantly subdivided into teeth or lobes. It will thrive in an ordinary greenhouse, and is likely to become popular for the conservatory. A first-class certificate was awarded to it.

Adiantum reniforme asarifolium is a distinct and pretty variety of the Kidney Maidenhair, differing from the type in having stipes a foot long and thick, glaucous green blades. It was introduced to Kew from Mauritius a few years ago. Some fine examples of it were among the Ferns exhibited by Messrs. J. Veitch & Sons last week.

Rosa spinosissima, var. *grandiflora*, is the most attractive single-flowered Rose among the many species and varieties which are now in flower at Kew. The type, the Scotch or Burnet Rose, is well known to your readers, and appears to be as delightful in your gardens as it is here. But this variety is a very different-looking plant, and can only be accepted as a form of the Scotch Rose in an extreme sense. Here it is planted in a large oblong bed on one of the lawns skirting a walk, and the bed is now a miniature forest of leafy shoots two to three feet long, with scarcely any bristles, healthy green foliage, and crowded with beautiful single flowers, three inches across, say, as large as those of *Cistus laurifolius*, milk-white, with a small maroon eye formed by the stamens. It is a most lovely Rose, and as happy under cultivation as a Sweet-brier. According to Lindley, who figured it in his *Botanical Register* (t. 888), this plant is a native of Siberia, whence it was introduced in

1818. It grows to a height of six feet. It is emphatically a plant for every garden, flowering in May and June.

WISTARIA MULTIJUGA attracted considerable attention at the Temple show last week, where a box of its long slender flower-clusters was shown from the garden of the Hon. W. F. D. Smith, Henley-on-Thames. It differs from *W. Sinensis* in having smaller flowers, with shorter pedicels, a looser arrangement, and in the length of the racemes, which in some cases were nearly three feet long. It has long been in cultivation at Kew, but is scarcely known in gardens. Although not so grand a climber as *W. Sinensis*, which, by the way, has easily earned for itself this year the right to be called the most beautiful climber in cultivation here, yet it has merit, and is worth a place on a wall or against a tree in every good garden. It is, of course, Japanese, and was first introduced into Europe in 1874, nearly sixty years after *W. Sinensis* came to us from China.

flowers scarcely an inch in diameter, with small, globose, reddish fruit, and that it is a very common and characteristic shrub, forming with *Amygdalus eburnea* the greater part of the scrub on the stony ridges of the Hariáb district. At Kew it is grown in the rock-garden, where its branches are long and arched over; crimson when young, and clothed with broad-based spines, the leaves an inch long, composed of about nine leaflets. The flowers are about as large as those of the common field Buttercup, *R. acris*, with five petals, a large cluster of stamens, the color being bright buttercup-yellow. The branches are never erect, but hang over, and they are now clothed with numerous flowers, the effect being that of drooping slender racemes of yellow flowers. It is a pretty little rose.

PRIMULA IMPERIALIS, the great yellow-tiered Primrose from the Java mountains, is again in flower at Kew, where, it will be remembered, it flowered for the first time in cultiva-



Fig. 41.—The Monterey Cypresses (*Cupressus macrocarpa*), at Cypress Point, California.—See page 241.

[*Wistaria multijuga* is probably not a Japanese plant, although it is the most commonly cultivated species in Japanese gardens, but a native of China or Corea. The common *Wistaria* of Japan is *W. Sinensis*, a native of all mountain forests in the three southern islands, below elevations of 5,000 feet. *Wistaria multijuga* flowers in this country, where it is perfectly hardy as far north as eastern Massachusetts, twelve or fifteen days later than *W. Sinensis*. This makes it particularly valuable by prolonging the flowering season of these plants. The flowers exhale a delightful perfume, while those of *W. Sinensis* are nearly scentless.—ED.]

ROSA XANTHINA was introduced to Kew about twelve years ago by Dr. Aitchison from Afghanistan, and described as a new species in the *Journal of the Linnean Society*, where it is called *R. Ecæ*. Aitchison says it is a small stiff shrub with numerous prickly stems, small leaves, and yellow

flowers four years ago. It is too tender to be grown in the open air, nor can it endure bright sunlight, the happiest position for it being on the shady side in a cool moist greenhouse. A rich open soil, a liberal allowance of pot-room and daily supplies of water are essential to its healthy growth. Under this treatment the plants at Kew have made large healthy foliage and pushed up scapes as thick as a man's little finger, which will probably grow a yard high. The flowers, which are rich yellow, are arranged in whorls in tiers, as in *P. Japonica*. We have never succeeded in crossing *P. imperialis* with any other species. Its nearest ally is *P. prolifera*, from the Himalayas, a smaller and much less interesting plant.

A traveling greenhouse is the latest English labor-saving invention, and a company, the Horticultural Traveling Structures Co., have taken out a patent for this, and are taking considerable pains to bring it well into public

notice. The invention is a greenhouse, without a floor, on wheels, which run on a tramway of the same width as the greenhouse, along which it can be pushed to cover any area inside the tramway. Thus a bed of Roses, say, three hundred feet by twenty feet, can be brought on in three successive batches by a greenhouse one hundred feet by twenty feet. In America there is nothing novel in traveling houses, nor is there in England in movable plant structures, and, except for its size, the traveling greenhouse is only the old-fashioned portable frame with wheels to facilitate its motion. It has one special value for English horticulturists, as, not being a fixture, it cannot be claimed by the landlord.

London.

W. Watson.

Cultural Department.

Notes on Trees and Shrubs.

WITH the exception of the so-called English Hawthorn or White Thorn, *Cratægus Oxyacantha*, and its varieties, and the little south European scarlet-fruited *C. Pyracantha*, few of the Hawthorns appear to be grown in American plantations for the intrinsic beauty of the flower or fruit. This fact is due to lack of appreciation rather than lack of beauty or ornamental quality in the flowers, for some of our native Hawthorns produce blossoms which cannot be rivaled by other species, not even by the English Hawthorn in its aboriginal state, and which to many English people is known as the "May." The English Hawthorn is more popular, too, because, by long cultivation and careful selection, many interesting variations have been procured and perpetuated by grafting, layering or other modes of division, so that now the catalogues offer varieties with single and double flowers, either white or of various shades of red color. Varieties with modifications in the shape of the leaves and size and color of the fruits are also offered. But there is no reason why we may not in the course of time, and with careful selection, derive equally interesting horticultural variations from some of our native species. In their wild state the different species native in north-eastern America produce a sequence of blossom from the middle of May to the end of June. The earliest to blossom is *C. mollis* (long regarded as a variety of *C. coccinea*), which in this latitude is usually in bloom from the middle to the end of May. Its flowers are as large or larger than those of any other species, expanding an inch or more in diameter. The fruit which follows is also of the largest, being an inch or more in diameter, deep scarlet in color, ripening in early September, and falling soon after maturity. When fully ripe, this fruit is mellow and soft, and often of a decidedly pleasant flavor. The large, broad, ovate leaves are distinguished by being densely soft pubescent on the under side. *C. mollis* will become a symmetrical little tree twenty or twenty-five feet high, and is thoroughly hardy, as it grows wild far north into Canada. It is usually armed with long spines, which are less numerous as the tree grows old.

The Scarlet Haw, *Cratægus coccinea*, is extremely variable from a botanical point of view, and its flowers may be one or two weeks later in opening than those of *C. mollis*. These flowers, too, are smaller, and the Thorn itself does not often reach the large tree-like size attained by *C. mollis*. The blossoms of the Dotted Thorn, *C. punctata*, appear a week or ten days later than those of *C. mollis*. They are somewhat smaller, but are borne in great profusion in corymbs along the upper sides of wide-spreading branches. In full bloom it is a very handsome object, either when seen from a distance or on nearer inspection when the large rose-colored anthers show distinctly against the snow-white petals. It is very hardy, and near Montreal, in Canada, specimens may sometimes be found with trunks a foot and a half to two feet in diameter, and branches which spread on each side more than twenty feet from the centre. In size it is not exceeded by any other of our northern species. Its fruit, which ripens in the late autumn, is large, of firm texture, pleasant to the taste, and will often keep fresh under the snows until the following spring. It is usually red in color, sprinkled over with numerous whitish dots, but trees bearing bright yellow fruit are not rare.

The season of bloom for *C. coccinea* and *C. punctata* is also the season for the English Hawthorn. The fruit of *C. mollis* is well grown by the time that the flowers of the Cockspur Thorn, *Cratægus Crus-galli*, are open, for this Hawthorn is just now, June 12th, coming into best bloom. As it grows here this is, perhaps, the most readily distinguished of all our

native Thorns, its obovate, wedge-shaped, evenly toothed, leathery smooth and glossy shining leaves being unlike those of any other species. It has probably been more often cultivated, both in this country and Europe, than any other American species, and altogether it is a most attractive little tree. The flowers, though not very large, are produced in abundance and are pure white in color, and they are followed by medium-sized fruit, which, when ripe, is of a dull red color and persists on the plants throughout the winter. This species has been somewhat used for hedges in some parts of the country.

The flowering of another hardy American Hawthorn, *Cratægus tomentosa*, is simultaneous with that of the Cockspur Thorn. It is a sturdy, vigorous growing species, forming a neat little tree. One of the latest of Hawthorns to blossom here is the so-called Washington Thorn, *C. cordata*, which naturally does not range so far north as the species already mentioned, but in cultivation proves quite hardy in this climate. Its blossoms are at least a week later in opening than those of the last two species, so that this is the Hawthorn which we are most likely to find in blossom toward the end of June. It is a slender tree, covered with clear, shining, bright green, triangular leaves, which are usually more or less three to five lobed and irregularly toothed. These leaves persist on the trees until late into the autumn and gradually change to bright colors before falling, and the bright effect of the foliage is increased by the small brilliantly colored fruit which may remain on the plants throughout the winter. This species has also been used for hedges, and either for this purpose or as a single plant it is well worth the attention of cultivators.

Arnold Arboretum.

J. G. Jack.

The Herbaceous Borders.

THE recent cool, showery weather has been most favorable to herbaceous plants, and I do not remember ever to have seen the borders look better than they do now, and there is abundant promise of growth and beauty during the next few weeks. The perennial Lupins have been, and still are, very showy. The variety grown here is *L. polyphyllus*, in various colors, from pure white through the different shades of lilac to deep purple. These are all seedlings from what was supposed to be seed of *L. polyphyllus albus*, but if the different colors are grown together, no one color can be depended upon to come true from seed. Lupins like rich soil, and do not bear transplanting when once established, and it is advisable to sow seed over again rather than transplant old plants. It has been told me that the common *L. perennis*, so plentiful here in a wild state, cannot be taken up and be made to live in a garden; this seems to be only half the truth, and that it is much easier to raise seedlings to secure the same results appears to be the other half.

The herbaceous Pæonies are just opening their first flowers, and, true to their past record, the rose-bugs arrived here the same day. It is a regret that we cannot enjoy these summer flowers more, and the question suggests itself, why are not the Tree or Mountain Pæonies more often seen? These have been fine for nearly three weeks, and the flowers are as handsome as the later herbaceous kinds, though, perhaps, of a more limited range of color, but they are much more rarely seen in gardens than the universally grown herbaceous kinds. There once was a suspicion that the Tree Pæonies lacked hardiness, but here, in one of the coldest parts of the eastern states, they thrive without any protection. It is true that these plants are not easy to obtain from dealers, but should the demand increase the supply will probably be equal to it, as houses importing Japanese plants offer as many as fifty distinct varieties, and even propose to send colored plates of all these kinds for inspection and selection. Among such a large number of kinds there should be a good assortment of colors to relieve the monotony, of the various shades of pink and rose usually offered.

Eremurus robustus, received last fall from Holland, has now a fine spike of bloom on the plant, and as the flowers open in succession, it will last several weeks. The pretty pale pink blossoms on a cylindrical spike about five feet high are really ornamental, and as the seeds are produced freely in this climate, there is no reason why the plants may not soon be seen in many gardens. *E. Himalayicus* was also planted, but this year it has made two crowns, and in consequence has not flowered; but another year it will be a fit companion plant to *E. robustus*. No special care appears to be needed in their cultivation. The thick fleshy roots are produced in a whorl from the crown, and these need to be carefully placed in the soil. No covering was given as a protection to our plants,

though this was due to an accident, since heavy snow fell before the work was done.

Lindelofia spectabilis is one of the best blue-flowered perennials in bloom now, and it has been good for some time past. This is one of the introductions of Herr Max Leichtlin, from whom we received the seeds. It is a near relative of the *Anchusa*, *Mertensia* and *Borage*.

South Lancaster, Mass.

E. O. Orpet.

Plants for Outdoor Decoration.

IN suitable locations some of the Musas are valuable for outdoor decoration during the summer, but the leaves of many of the species are easily injured by wind-storms, and it is, therefore, necessary to plant them in sheltered portions of the garden. In the middle and northern states I have found *Musa Cavendishii*, *M. Ensete* and *M. Martinii* to be the best for cultivation in the open air.

Of these, *M. Cavendishii* is the most dwarf, and is, for this reason, the best species for use in small conservatories; it frequently attains its full growth and produces fruit when only six to seven feet in height. The Abyssinian Banana, *M. Ensete*, under favorable conditions makes immense leaves. The reddish midribs add greatly to its effectiveness, but, unfortunately, the foliage is liable to split into ribbons in a strong wind. *M. Martinii* is a later introduction than *M. Ensete*, and of somewhat similar character; it seems to resist the wind better, and is, consequently, likely to be used more generally for outside planting as soon as it becomes plentiful. These two species can only be propagated from seeds, so far as I have learned, but the Chinese Banana, *M. Cavendishii*, produces suckers from the base of the stem, and as their growth is rapid they soon grow to a useful size.

The chief points to be observed in the cultivation of Musas, either under glass or out-of-doors, are plenty of moisture and a rich well-drained soil; one-third manure is not too much to use in potting soil, and for outdoor planting they should be thoroughly watered at least every second or third day during dry weather.

Two species of *Strelitzia*, at least, should be included for conservatory-decoration during the winter and spring months, and these are also useful for diversifying subtropical bedding during the summer. Their leaves are decidedly tough and are seldom injured by either wind or rain. The most common species, *Strelitzia Reginae*, is probably the oldest in cultivation; with reasonable care it produces brilliant flowers quite freely during the spring months. *S. augusta* is a much stronger grower than *S. Reginae*, and reminds one of the foliage of the *Traveler's Joy* (*Ravenala Madagascariensis*). These plants are generally propagated by division of the roots, and this is best done in the spring; the plants should be kept somewhat close for a short time after division, when they will soon become useful, either for the conservatory or the flower-garden.

Humea elegans, a useful decorative plant, is not new either for greenhouse-decoration or for outdoor planting, for I recollect seeing it used for both purposes at least eighteen years ago in central New Jersey. There the warm sandy soil seems particularly suited to it, and its pinkish, feathery inflorescence and bold foliage made a striking centre-piece for a large circular bed. Plants of *H. elegans* should be raised from seed the previous season and grown on with plenty of light and air in an intermediate house. Sufficient soil and moisture must be provided for the plants. *Humeas* soon lose their bottom leaves when pot-bound or if allowed to become very dry. The beginning of June is, I think, early enough to plant them out, for if exposed too soon the foliage becomes rusty and unsightly.

Holmesburg, Pa.

W. H. Taplin.

Orchid Notes.

ONE of the most difficult points in the cultivation of Orchids is to prevent a second growth from the same set within a year. This is fatal to some Orchids, as *Dendrobium Wardianum*; on others the effect may not be noticed at once, or even in the same season, but bad results are sure to follow in time. *Dendrobium Wardianum* is the first of the genus to make an early start. Plants of it are kept in the intermediate house this year, so that its growth may be somewhat checked, and to prevent its maturing early. *Dendrobiums* present a wide study for the cultivator who has any large number of species under his care. The season is, as already said, often too long for some species, though never too long for others, as *D. Dalhousianum* and *D. Brymerianum*, while for others the growing and resting periods

should be distinctly marked. *D. formosum* is an example of the latter class. Their resting season should now be over and the plants started into active growth and encouraged to go on without a check through the summer. When their growth is completed, the flowers will be produced without a rest. When these have faded, the plants require at least six months' rest in a cool house, kept at about forty-five or fifty degrees. This is the practice adopted by Mr. George Mac-William, of Whitinsville, Massachusetts, and, I believe, was originated by him. He has had the plants now under his care for nine years, and they cannot be excelled as examples of good cultivation.

We formerly had trouble in getting *Cypripedium insigne* to flower well, because we made the mistake of having very thrifty plants. They were treated to manure-water, and were green and vigorous, but when the time for flowering came the plants simply continued to grow and look strong, and did not flower. We now keep them in the coolest place in summer to prevent any second growth that might be induced by heat, and have left off giving manure-water except to such as are root-bound and really need it.

We are trying *Cattleyas* and *Laelias* in a large, cool and airy structure for the summer, and they have improved in looks already. Small houses have a tendency to become overheated in the hot months of the year, far beyond the requirements of these plants. This causes the growths to mature early, and a second growth ensues. The plants are thus deprived of the absolute rest so beneficial in winter and conducive to satisfactory flowering. A few pieces of *Laelia præstans*, imported last fall, have done well simply pegged on a piece of Fern-root and suspended in the cool-house. There *L. Dayana* thrives, and *L. præstans* has already flowered and is now starting to grow again in a strong and pleasing way. The roots are rambling through the piece of Fern-root and seem to appreciate their freedom. *Lycaste Skinneri* should never become dry at any period of the year. The roots are always more or less active, even in midwinter, since that is the flowering season. An occasional wetting with weak manure-water is a decided benefit to the plants, especially when in active growth or about to flower. Under this treatment bulbs of immense size are obtained and an abundance of flowers produced.

Orchids with roots of the same structure as the *Cattleyas* should not be stimulated by the application of manure-water to the roots, but ammonia in the atmosphere is decidedly beneficial, and this may be applied by damping down under the stages occasionally with weak manure-water. I have found, on the contrary, that the *Calanthes*, *Phajus*, *Pleiones*, *Coelogyne* and *Selenipediums* are improved by an application of manure-water when in active root-growth; the structure of their roots is altogether different from those of *Cattleyas*, *Dendrobiums*, *Odontoglossums* and other genera of Orchids.

Boston, Mass.

Plantman.

Bougainvillea glabra.

THIS is one of the finest of all climbers for the stove or greenhouse. It does best in a house where a minimum temperature of fifty-five degrees can be maintained in winter, but I have grown it successfully in an ordinary greenhouse, where the thermometer occasionally fell to forty degrees. In the warmer house the blooming season is earlier, but in a cooler structure the color is better and the flowers have more substance. *Bougainvillea glabra* may be successfully grown and flowered in a pot, tub, box or bench. Trained on a balloon trellis, it makes a handsome exhibition plant, and with *Stephanotis*, *Allamandas*, *Clerodendrons* and *Dipladenias* is found in most of the summer and autumn exhibitions in Great Britain. It is advisable to give the plant a good light position. For compost, ordinary fibrous loam, with a good admixture of well-rotted cow-manure and a dash of sharp sand, will be found suitable. When the plant has become root-bound liquid-manure may be freely applied, and a surface-dressing of cow-manure will be helpful.

It is easy to have flowers of *B. glabra* in summer, but to have a full supply during the dark winter months is a more difficult matter. By withholding water during the summer and only moistening the surface-soil once a day, the plant practically can be held in a dormant condition. Early in the fall the plants may be repotted, or some of the surface-soil may be removed and fresh, rich compost added. The plant will stand rough handling at this time, and, if necessary, a portion of the roots may be cut away and the plant pruned to suit the space it is intended for. If it is then kept well watered and given an ordinary Rose-house temperature, there should be a good show of bloom by the new year, and the flowering

will last until midsummer. I have propagated Bougainvilleas from soft shoots rubbed off with a heel and half-ripened wood. A good bottom-heat is necessary, and the soft shoots will damp off if not carefully watered. The finest specimen of *B. glabra* I remember to have seen is in one of the green-houses of Miss M. S. Walker, at Waltham, Massachusetts. The plant covers a large space and has shoots six to nine feet long, which are covered more than half their length with bright pink flowers. The plant is on a bench, and the treatment given to it by the gardener, Mr. P. Cairns, is similar to that already described.

Taunton, Mass.

W. N. Craig.

The Water-garden.—Hardy Nymphæas have been in bloom here for several weeks, but the tender kinds lately planted have made no progress in the low temperature. The Swedish Water-lily, *Nymphæa alba rubra*, has flowered in the tank, giving me my first opportunity to observe it closely. It does not appear to me to be a handsome variety. On first opening the outer petals are nearly white, the second row slightly shaded, and inner row deeply stained with pink. In this phase it is fairly pretty. Later it deepens with a dull bluish tinge, and could not be considered handsome by any stretch of the imagination. This *Nymphæa*, with me, is a thrifty grower, and I have not, after three years, discovered the conditions required for its successful culture. It has been shifted from very fertile soil to a less stimulating one and back again, and in deep water and again in shallow, without apparent indication of its preference. It sulked in the bottom of the tank nearly all last season, but lately has taken a new start, after the complete winter's rest. All the hardy Nymphæas seem to gather strength enough during the winter and, perhaps, late fall to carry them well forward another year without stimulants. Perhaps, also, the tanks accumulate certain elements from rains, snows and decaying vegetation, which are helpful in the early growing season. With my limited space it pleases me to grow more of a variety of Nymphæas than can be properly accommodated. Hence I prefer small plants and to use only enough fertilizer to keep them in good heart. They will mostly grow well enough in ordinary soil till the middle of summer, at which time they are apt to show the need of stimulants. At present a spare piece of *N. alba candidissima* is flowering in the tank, its roots having been in an eight-inch pot with very little soil for two seasons. Its leaves, however, are imperfect. Of course, where space is available, *Nymphæa*-tubers should be planted in very rich soil. The hardy Nymphæas are really hardier than usually supposed; the tubers will survive if frozen up solidly, as will sometimes happen.

The Noble Grasses.—These plants grow in effectiveness from year to year, and this season the Bamboos give indication of becoming taller and more satisfactory. They lose all their leaves here in winter, but soon put forth others from the old shoots; the succeeding new shoots, however, gradually rise higher, and in the course of time, perhaps, the plants will be more imposing than at present. *Panicum spectabile gigantea*, noted last year as a very tall quick-growing Grass, was winter-killed at the roots under a heavy mulch, but is coming swiftly from self-sown seed. It grows so rapidly that its hardness is of little importance. The *Eulalias* are so handsome and hardy that they really fill most of the requirements for tall Grasses. Of the smaller kinds, I like *Elymus glaucus*, with its steel-blue effectiveness. *Pennisetum longistylum* is a popular Grass, but its heads have rather a caterpillar-like effect which may not always please.

Elizabeth, N. J.

J. N. G.

Correspondence.

Notes from West Virginia.

To the Editor of GARDEN AND FOREST:

Sir,—The *Xanthoceras*, which blooms here early in May, is a shrub which one likes to have close at hand, and fortunately it is an admirable plant while young to mask the foundations of the house, where it shows its full beauty. It has an upright tendency, and even the white bell-shaped flowers are held stiffly erect. The individual flowers have a centre of pale luminous yellow when they first open, which gradually deepens to red, and they come in long racemes and have a faint fragrance. Even when out of bloom the plant is attractive on account of its seed-vessels, and its neat foliage somewhat resembles that of the Mountain Ash.

Among many experiments in arranging shrubs which bloom at the same time, I may note a group of *Exochordas* and a

variety of Japan Quince sold by nurserymen as *Moerlosii*. The Quince begins to bloom before the *Exochorda*, but its blossoms last longer, and when both are at their best the effect of the pure white flowers and light green foliage of the *Exochordas*, when contrasted with the dark glossy leaves and rich carmine flowers of the Quince, is strikingly beautiful. I may add that the *Exochorda* does not take kindly to our soil, and although plants sometimes reach a height of ten feet in six years after planting, this period is about the limit of their life with us. Another attractive group is composed of *Virginia Fringe-trees* and *Laburnums*. The flowers of the first, which resemble a veil of white mist, are well set off by the long, drooping, yellow racemes of the *Laburnums*, and, taken together, the two produce an admirable effect.

Neviusia Alabamensis suckers abundantly, so the one specimen of this beautiful shrub which we originally possessed has become a little thicker, which, when in flower, has such a delicate and feathery look that the *Spiræa Van Houttei* planted next to it and flowering at the same time seems coarse in comparison.

Our earliest Roses to bloom this year were the Scotch Rose, which flowered on the 3d of May and was quickly followed by *Rosa cinnamomea* and the yellow Austrian Brier. *R. multiflora*, which GARDEN AND FOREST has so often commended, has proved exceedingly valuable here, and is a beautiful object in flower, covering a large mass of rock with its tangled branches. Of the hybrid perpetual Roses, Ulrich Brunner is one of the most satisfactory. Its large, double, dark velvety flowers are borne in profusion, and its buds rarely come blind.

I cannot understand why everybody doesn't have a generous supply of *Hemerocallis flava* with its bright yellow lily-like and fragrant flowers. They are perfectly hardy, of easy culture and most useful for cutting, while they increase with great rapidity and endure much unkind treatment.

Shepherdstown, W. Va.

Danske Dandridge.

The Development of Fungi.

To the Editor of GARDEN AND FOREST:

Sir,—That an intimate relation exists between certain fungous diseases and conditions of weather is a well-established fact. A most striking illustration is afforded by rust of wheat, and all observers agree that this disease is worse during rainy and sultry weather than when the opposite conditions prevail.

The genera *Exoascus* and *Taphrina* are certainly much worse in some years than in others. During 1892 and 1893 the following species were abundant at Ames, Iowa: the so-called *Exoascus pruni*, causing Plum pockets and an enlargement of the young stems of *Prunus Americana* and *P. Chicasa*; *Exoascus deformans* on Peach-trees; *Taphrina aurea* on *Populus nigra*. The years 1892 and 1893 may be compared with 1894. There has, this year, been little indication of the *Exoascus* on Plum-branches, though the *Chippewa* and *Cheney* Plums have some pockets. The *Exoascus* has not been seen on Peach-trees, though very common in 1892; nor has the *Taphrina aurea* been observed this year, though very common on some of the Russian *Poplars* in 1893. In 1893 rains were frequent during the month of May, followed by cold, raw and moist, alternated with hot days. It has been cold and raw at times this year, but there have been few rains here.

While the mycelium in *Exoascus* is perennial, the spread and rapid distribution of these diseases at certain times must be attributed in part to the rains, which carry the spores down over the leaves, stems and flowers. We may mention in this connection that the *Exoascus deformans* has been so severe on some of the Peach-trees that they were materially injured from the effects of the fungus in 1892 and 1893. We may add, however, that this locality is out of the range of such hardy Peaches as the *Bokhara* and *Sargent* and the fungus have done these trees more injury than if the varieties were perfectly hardy.

As another illustration showing how climatic conditions favor the development of certain fungus diseases, I may mention the Plum and Cherry rot, *Monilia fructigena*. This disease, though most evident when it attacks the nearly ripened fruit, is really most injurious to flowers. The season of 1892 is in strong contrast with this one. In 1892 the flowering period was accompanied by almost continuous rain. This year we had only slight showers, as in 1893. The failure of the plum crop may be accounted for on two grounds. The cold raw winds and rain prevented insects from flying, and thus the flowers were not pollinated; and the *Monilia* spreads with great rapidity during rainy moist weather. Many trees contained mummied plums, and from them the infection

spread rapidly to nearly all of the flowers. Not only did it affect the flowers, but in many cases the young leaves and twigs were affected. It spread to such plants as *Amygdalus nana* and to Peach-trees and miscellaneous plants growing in proximity to them. The fact that old rubbish is a constant source of danger should not be overlooked.

Iowa Agricultural College.

L. H. Pammel.

The New Nurseries at South Orange, New Jersey.

To the Editor of GARDEN AND FOREST:

Sir,—Among the plants which I found at the nurseries of W. A. Manda a few days since, a rather full set of Ivies was particularly interesting. Few of these plants are in general cultivation, and I therefore made memoranda of the kinds which seemed most distinct and striking. Of the various forms of *Hedera Helix*, the variety *Algeriensis* has large light green leaves of varying shapes, and is, altogether, a very bright plant and apparently free in growth. The variety *Dentata* has still larger leaves and darker foliage, while *Atropurpurea* has the darkest foliage of all, being nearly black later in the year. The leaves are of medium size and rather more finely divided than those of *Digitata*, and the plant is a slow grower. The leaves of *Digitata* are blackish green, with light-colored veins, colors which also prevail in *Denerailensis*, a pretty small-leaved variety. In *Chrysocarpa* the central lobe is elongated, and the color is a greenish gray, while in *Taurica* the leaves are heart-shaped. Some of the variegated Ivies make good plants, and they may be useful for window-boxes and for cutting for floral arrangements. The best is a variety of *Hedera Helix*, which is named *Marginata rubra*, with occasionally another Latin adjective added. In autumn it takes on a deep rose color at the edge of the leaf which is maintained throughout the winter. *Cavendishii* is a pretty small-leaved kind for pots, while *Banksiana* has a wider golden margin, and *Himalaica* is a variety with longer leaves and light green centre and ample yellow margin. There is a variegated form of the Irish Ivy which, while very vigorous, is not constant in its variation.

Mr. Manda has gathered an extensive collection of greenhouse and hardy plants, among which I noticed the new white-flowered *Canna*, as it is sometimes called by florists, although it is botanically a *Calathea*. It is a new introduction from Guinea, strikingly like a *Canna* in form and habit, and its flowering is awaited with interest. There were fine specimens of the white-flowered *Swainsonia galegifolia*, whose dainty foliage and pure white pea-shaped flowers have made this an increasingly popular plant. Most of the well-known decorative species were here in abundance, and more seedlings of different plants than I have ever seen together. As an example of the fact that plants under glass sometimes take on new phases, I observed in one house some pots of the hardy Evening Primrose, *Oenothera speciosa*, the flowers of which were quite distinct, having deep yellow bases to the pure white petals.

This new nursery is located at South Orange; the four acres of land are rapidly filling with hardy plants, and the brook which borders it on one side is being broadened out into pools to furnish a supply of aquatic and bog plants.

New York.

R.

Meetings of Societies.

The American Association of Nurserymen.

THE nineteenth annual convention of the American Association of Nurserymen brought together nearly three hundred members at Niagara Falls on the 6th of June, many of them from Ontario and remote states, although western New York was naturally most largely represented. Since this organization is devoted mainly to trade interests, the papers which are of interest to the general public were comparatively few. The President, Mr. N. P. Pearsall, of Fort Scott, Kansas, in his opening address said that nursery interests had weathered the commercial storm better than most other industries. In spite of apprehension, the trade this spring had been active, although prices were low, and nursery stock of all kinds in nearly every part of the country had been cleared up better than it had in many years. He criticised the laws enacted in some Pacific states, ostensibly for preventing the introduction of insects and plant diseases upon nursery stock, but which were better adapted, in his view, to keep out trees than pests, since their operation has practically excluded eastern trees. He argued that it would be easy to have nursery stock examined by experts where it was grown at the expense of the con-

signor. The inspection could be made then more carefully than after the stock had been packed and shipped, and there would be no danger of losing young trees on the frontier after they had made an expensive journey.

A long discussion followed a resolution favoring the admission without duty of all stock plants which cannot be successfully grown in this country, the chief argument being held on the question what particular stock plants can be profitably grown here. It seemed to be the general opinion that, even with the frequent use of spraying, Pear-stocks cannot be successfully grown here, and the same is practically true of the Quince-stock. In reference to Plums and Cherries, there was a difference of opinion.

A general expression of opinion in reference to the freezing weather of last March showed that its effects were serious as far north as North Carolina, and that it extended westward to the plains and southward to the Gulf. In the middle southern states it seems to have been the most serious late frost within the memory of the present generation.

Mr. J. H. Hale, of Connecticut, in the course of his address on "Profitable Methods of Introducing New Fruits," paid a eulogy to the labors of E. W. Bull, the introducer of the Concord Grape, and at his suggestion a purse of \$100.00 was raised as a testimonial to Mr. Bull, and sent to him with appropriate resolutions. The essential point in the successful introduction of a new fruit, in Mr. Hale's opinion, is that it should supply some actual need, and without this it will never fill any prominent place, no matter how much it may be advertised.

Professor Bailey, of Cornell University, in speaking of synonyms, said that these can often be accounted for by a re-origination of some variety or by variation of the original type when it is grown under different conditions and in different localities. In this way synonyms have a distinct natural history, and the more synonyms a variety has the greater are the chances that this variety is adapted to a wide range of climate and uses. All the old sorts of fruits have many synonyms because seedling types of distinct origin are constantly referred to the original stock, each one being an independent testimony to the value of the kind. These synonymous forms are not necessarily identical with the parent, but are rather distinct strains or sub-varieties which may be better suited to certain purposes than the type itself.

Robert Douglas, the veteran nurseryman, of Waukegan, Illinois, read a paper on forestry which dealt particularly with the distribution of certain types and the relation of this distribution to the characters of seeds. For example, it was a particularly happy thought of Nature to give winged seeds to cone-bearing trees so that their gyrating motions as they fell might carry them from under parent trees, for if the seeds should germinate in their shade the seedlings would damp off.

Mr. N. H. Albaugh, of Ohio, spoke of the habit of some nurserymen of refusing trees on their arrival because they do not consider them to be of the grade which had been ordered. The trouble lies in the fact that there is no uniform system of grading fruit-trees. In eastern nurseries a first-class fruit-tree is one that has a heavy trunk and a low head, while in the west a tree is demanded which has a tall and slender habit of growth. Refuse nursery-stock is of no value to the distant consignor, and therefore buyers should familiarize themselves with the features of trees grown in different parts of the country and then exercise charity.

Mr. Wing R. Smith, in speaking of the culture of standard Pears, said that good stock could only be grown upon heavy land which was well drained. He considered tile drains a necessity in almost every soil which was suitable for a Pear nursery.

In the discussion which followed the paper of Mr. C. Morgan, of Ontario, on novelties, in which the introduction of new varieties, until after they had been thoroughly tested, was discouraged, the opinion prevailed that it was quite impossible to make anything like a full test of any novelty until it was sent out, and that really the only way to test varieties for all purposes is to introduce them.

J. H. Hale, of Connecticut, was elected President for the ensuing year; N. H. Albaugh, of Ohio, Vice-President; N. A. Whitney, of Illinois, Treasurer, and George C. Seagar, of Rochester, New York, Secretary.

Notes.

A fruit-grower in Chautauqua County, New York, who also grows flowers, had Crimson Clover in bloom in his orchard. In sending some cut-flowers to Buffalo, New York, he put in, by

way of variety, a few Clover-flowers, labeling them *Trifolium incarnatum*. The next day he received a telegraphic order for more, and he now finds his Clover-field a new source of revenue.

The extermination of our native flora by forest-fires is often more complete than that caused by plant collectors, who miss small seedlings and do not remove all the roots of plants, many of which will start from dormant eyes. But a fire, especially when it attacks the habitat of plants such as *Cypripediums*, imbedded in *Sphagnum*-moss and covered with old leaves, completely destroys them root and branch.

In early spring *Oxalis purpurea*, a native of the Cape of Good Hope, is one of the most delightful features in some Santa Barbara gardens, where this pretty little plant has become thoroughly established and where it forms broad mats of light green foliage studded with its large rosy flowers, which open in succession for a long time, and where it grows and blooms with a freedom and luxuriance unknown in the gardens of colder climates.

In some of the gardens of San Diego and Santa Barbara, *Dolichos Lablab* (*D. lignosus*), a tall, stout, woody climber, with trifoliate evergreen leaves and short racemes of rosy-colored flowers with purple keels raised on long stout peduncles, is used with excellent effect to cover arbors and other buildings. It is a native of India, where it ascends the Himalayas to elevations of six to seven thousand feet. In California it begins to flower in early spring. Roxburgh describes thirteen varieties cultivated in India.

Cistus Monspelienensis, a low-growing evergreen, which is being carefully tested in Mr. Meehan's nurseries at Germantown, to determine its hardiness, was covered with white flowers the first week in June. Another species, *C. laurifolius*, a large-growing shrub, is perfectly hardy, blooming in Germantown about the middle of this month. A specimen of *Pterostyrax hispida*, nearly twenty feet high, flowered beautifully in these nurseries this year; the ornamental value of this comparatively new hardy Japanese tree deserves to be more generally known.

The arguments for the protection of forests, wild plants and birds are many of them similar, as the interests defended are closely related, and Superintendent Babcock, of Oil City, Pennsylvania, has recently established a Bird Day in the schools under his supervision. The literary exercises were similar to those that have characterized the observance of Arbor Day for the last decade, the object being the preservation of American birds from the women who wear them and from the small boy. So excellent and useful an exercise can scarcely fail to become generally observed throughout our public schools.

In the last annual report of the Park Commissioners of the city of Louisville, Kentucky, a plate is given in which the damage done to street-trees by itinerant tree-trimmers is strikingly set forth. Some trees, whose leading branches had been carelessly lopped off, are shown, and their sickly, scarred and generally dilapidated look is in strong contrast with the picture of another tree of the same species which stands one hundred feet away from the first group and has been allowed to grow naturally. The plate teaches the lesson that bad pruning is worse than no pruning at all. We should like to see another illustration to show the good effects of proper pruning.

In the June issue of *Erythraea* Mr. J. G. Lemmon describes, under the name of *Pinus Apachea*, a Pine collected by him on the Chiricahui Mountains of south-eastern Arizona, the name he has selected probably relating to the fact that these mountains were once a favorite stronghold of the Apache Indians. Its relationship is with *P. ponderosa* and *P. latifolia*, and, unless it may be considered an extreme northern form of *P. Engelmanni* of the Sierra Madre of Mexico, it will probably best be united with *P. ponderosa*, from which it hardly appears sufficiently distinct to be considered more than a variety of that widely distributed and very polymorphous species. Little, however, is known of the trees of the Chiricahui Mountains, now one of the least explored regions in the United States, botanically, and until more material can be obtained for the study of this tree any opinion upon Mr. Lemmon's species would, perhaps, be hazardous.

The Alligator Pear, as the fruit of *Persea gratissima* is known, is occasionally seen in this market, and although it ships well and of late years there is a growing demand for it, it has never become so popular here as it is in tropical

countries where it is largely used as a salad-plant, and often eaten with pepper and salt only. Dr. Franceschi writes in a California paper that there is a specimen of this *Persea* in Santa Barbara which is eighteen years old, and is now thirty feet high, and ripens in favorable seasons five hundred fruits. Seedlings from this tree and from other sources vary much in the size and shape of their leaves, and, no doubt, the fruit will show similar variation, so that by careful selection better varieties may be secured and propagated by grafting. The tree is a beautiful evergreen of pyramidal growth, with glossy foliage and greenish flowers, which appear in short panicles on the tops of the branches, not unlike those of the California Laurel, to which it is closely related.

One hundred and fifty years ago Baron Henry William Stiegel settled in Lancaster County, Pennsylvania, and founded the borough of Manheim, calling it after his native town in Germany. The Baron founded large iron and glass works and cultivated a Rose-garden which attracted visitors from afar. In his old age, fearing that the church he had built might be some time claimed by his heirs, he gave the church, together with the land for a cemetery, to the congregation, with the proviso that a red rose should be paid every year to himself or his heirs. The tribute was paid annually for nearly a hundred years, when it fell into disuse, but has lately been revived again, and last week the rose festival of Manheim was celebrated, and the old church was transformed into a bower of beauty, great numbers of people gathering from the surrounding country with contributions of roses and other flowers for its decoration. The red rose was presented by the pastor, Dr. L. Lohr, to Mrs. Rebecca Boyer, of Harrisburg, the great-granddaughter of Baron Stiegel, and other descendants of the Baron were present from Virginia and other states as well as from Germany. An oration was delivered by Attorney-General Hensel.

It is certainly strange that American gardeners have paid so little attention to the Mountain Laurel, *Kalmia latifolia*, as a decorative plant. Probably there is not one Laurel planted in this country for every thousand *Rhododendrons* and *Azaleas*, although the flowers of the Laurel are not less beautiful; indeed, some good judges consider them more beautiful than the flowers of any other American shrub. It is, moreover, an easier plant to cultivate, and much less particular about soil and exposure. One of the reasons why it has been neglected, no doubt, is that it is a common native shrub, and another is that it is not always an easy matter to procure well-grown plants. Young plants can be dug up in the woods, but they require some care and cultivation in the nursery before becoming well established. Now, however, small plants covered with flower-buds can be obtained from Dutch nurserymen by the thousand at what seems a ridiculously low price. At this time of the year no other shrub is so beautiful in the northern states; it is one of the best subjects to plant on the borders of natural woods or in other half-wild situations, as it endures the shade of overhanging trees and does not suffer from drought. Its value as a decorative plant should be better known and more often insisted upon.

The benefit of cross-fertilization as a means of increasing the productiveness of Plum-trees has been often observed, but some experiments made by C. H. Heideman at New Ulm, Minnesota, seemed to indicate that within certain limits foreign pollen has a secondary effect upon the size and quality of the fruit. Blossoms of the Wolf Plum fertilized with pollen from the Hiawatha Plum produced fruit which very early showed superior size to those fertilized with the pollen of half a dozen other varieties, and when ripe they were of a plainly superior quality. The pollen from other varieties showed its influence on the fruit for good or bad where blossoms were cross-fertilized on the same tree. Differences in individuals of the same groups—that is, in the fruits which resulted from pollen from any one tree—were scarcely noticeable, but these differences were marked when the various groups were compared. Another instance was cited in which a tree bore large, oblong, free-stone fruit of good quality when it was fertilized by pollen from a Weaver tree, but when left to itself the fruit was smaller, round and cling-stone. It should be added that these results do not agree with the tests made at several of our experiment stations, where the weight of authority indicates that among Rosaceous plants there is no immediate secondary effect of pollen upon the fruit. The question, however, is still in dispute, and if the quality of plums improves or deteriorates when the blossoms are cross-fertilized, it is a matter of importance to know which varieties to plant for the production of pollen.

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"Nature and the Rich."

AN admirable article on the condition of gardening-art in this country appears in the Contributor's Club of the *Atlantic Monthly* for June, under the heading that we now quote. It explains a danger which, although seldom recognized as such, is the one that most seriously threatens the progress of the art of gardening in America, and even tends to impair the innate love of our people for Nature itself. The writer's plea is for the use of "natural resources in landscape-gardening," and his protest is against the prevalent idea that "lawns and flower-beds and the like are the only possibilities for beautiful grounds." No one, he says, "is properly underscoring for the benefit of the stupid rich" the chief lesson taught by Mr. Olmsted's work at the Chicago Fair—"the lesson of the lagoon on the value of cultivating and heightening without change of character Nature's own choicest efforts."

Readers of this journal need not be told that it has invariably aimed to enforce this lesson; has frequently cited examples where the use of much money, time and pains has merely resulted in deforming Nature, and occasionally (as often as they could be found) has described places where a far smaller outlay of money and effort, used with more intelligence and a truer sense of art, has preserved local forms of natural beauty, with an accentuation of their intrinsic character, and a consequent heightening of their charm. But this is a lesson which needs to be often repeated, and we heartily welcome it as clearly set forth in a non-professional periodical. Nothing could be more true than the statement that "we have only to look at the pleasure-grounds of the rich, from Newport to Oconomowoc, to see that the notion that Nature anywhere knows what she is about is quite foreign to the popular creed in gardening." And it may well be added that this "creed in gardening," while showing no real appreciation for Nature, has no real understanding of art. This, we think, is partly because few Americans yet sincerely care about their pleasure-grounds. It is "the thing" to have handsome grounds as large as one's means permit; but an owner is usually satisfied to follow other people's

example in their arrangement because in his heart he takes very little interest in them. Nor is this less true if we substitute the feminine for the masculine pronoun. English women, even more than English men, are apt to have a true love for their gardens and parks; but American women seem to feel this love even less often than American men. They do care about the interior of their houses and about their clothes; consequently, while fashion is largely regarded in both these directions, nevertheless it is not allowed to crush out all individuality; and therefore an artistic effect, marked by appropriateness as well as personality, is often the result. We do not believe that artistic feeling is lacking in our people. On the contrary, the creation of the Chicago Fair and the strong impression its beauty made upon the public mind, suffice to show that this feeling may be stronger in them than in most other modern nations. But as yet it is largely latent; and as regards gardening-art one cannot feel that it has even begun to awaken in any popular sense.

Another reason for our monotony of "lawns, flower-beds and the like" may be found in the rapid growth of our fortunes and the undue value consequently put, in every branch of art, upon results which evince the expenditure of much money. The most ignorant or careless person instantly sees that wide, carefully tended lawns, gaudy flower-beds, and crowds of odd or exotic plants must represent a considerable outlay of money; and often he is charmed by his mere perception of this fact just as the owner himself is charmed by the thought that it is plainly to be perceived on his place. Custom and indifference combine to blind the eyes of more refined and cultivated owners to the truth that their places thus reveal wealth alone, while they fondly fancy they reveal beauty, too. But, whether vulgarity of feeling does or does not lie behind the result we see, there can be no question that this result is very often vulgar to a degree which would be instantly noted and condemned were it equaled in our house-interiors.

By vulgar we mean ostentatious, inappropriate, inartistic and ugly. We mean that most of our country places, large and small, look as though the aim had been to spend as much money upon them as possible, and to make as much show as possible for that amount of money. This result can be as surely attained in a small door-yard as in a large estate, just as the sitting-room of a cottage may be as vulgar in its way as the drawing-room of a hotel. And, unfortunately, it is attained almost as often by people who have little money, and esteem themselves modest and refined citizens, as by those whom they would dub ostentatious millionaires. Moreover, while the means employed differ as between the cottage parlor and the hotel drawing-room, those used in small villa grounds and great country places are apt to be quite similar in kind. The almost universal error is that no one believes "that Nature anywhere knows what she is about." The sinning of the very rich is more heinous only because it is wrought on a larger scale and to a more conspicuous result. They have more power for evil, but the relatively poor man is just as apt to wreak his seeming spite against Nature to the best of his ability.

The general practice, as the writer in the *Atlantic* explains, is to buy the most charming spot that can be found and then to sweep everything which nature has placed there away, and, "starting from the bare ground, create a lawn and plant evergreens," following this up by cutting places for a multitude of chromo-like flower-beds in the lawn thus carefully created, and setting as many novel, vivid or curious plants as possible in inharmonious contrast with the evergreens and flowers. It is plain that this means ostentation; and as plain that it means inappropriateness, and therefore lack of art and lack of beauty. The basis of every beautiful effect must be appropriateness. A delicate little water-color would be out of place and, therefore, displeasing on the great gilded walls of a ball-room, just as a life-size portrait of a lady in a ball-dress would be out of

place on the walls of an Adirondack cottage. We all know this. But how often do we see a similar recognition of the primal beauty of fitness regulating the selection of the plants we place near our houses, or those we associate closely together in our grounds? Our architects have learned that there should be some relationship between a house and its surroundings—not only as regards the difference between city and country situations, but as regards that between country situations of various sorts. But our gardeners and their employees are slow to recognize canons of this sort. They try to make little landscape effects upon sites where the entire domination of architectural factors would prescribe at least some degree of formality; and with the lawns and plants suitable for broad, fertile inland districts, they surround houses built on the mountain-side or the verge of the ocean's cliffs. Nature, they think, has nowhere known her business; and they themselves have but a single receipt with which to make up for her unintelligence.

Few spots likely to be chosen for the homes of people who have any money at all to spend upon gardening are wholly devoid of natural individuality; and few kinds of natural individuality wholly lack suggestions of beauty. It should be the business of an artist, or of an owner who professes to care for his grounds, to understand and appreciate these suggestions, and to study how he may enhance, purify, accentuate and glorify them. Very often lawns, at least, are desirable, although most of the other devices of the average gardener are less likely to be so. But even lawns are undesirable in a region where there is nothing to suggest them, and the fact that they have been created with great difficulty will always be plain to an observant eye. Thus they will lack the beauty of appropriateness to their surroundings; and they will be stamped as vulgar because they must seem ostentatious. Everywhere and always the true lover of outdoor beauty will listen for the theme which Nature supplies; and in all his variations he will respect this theme. Often a great saving of money will result from adopting this plan rather than exemplifying the "popular creed"; and yet a far higher degree of beauty will have been obtained. Sometimes, on the other hand, it will be more costly and troublesome to follow out Nature's scheme than to create grounds of the conventional type, and less "show" will be made for the money. But a man who truly loves Nature and art, and has felt their refining power, will hardly be deterred from righteousness by this consideration.

Garden Flowers and their Arrangement.

THE very word arrangement, when it is connected with a flower-garden, suggests formality, to a greater or less degree. But there is such a thing as arrangement which has in it no formal element. For instance, generally speaking, the objects which an artist paints in his picture are relatively arranged, but with a studied avoidance of formality. But where is the connection between a picture and a flower-garden? It seems absurd to ask the question; the garden is a picture in itself. This, however, is something which we fail to realize, and, as a consequence, the garden is seldom arranged like the picture, formal or not.

It does not seem as though there is any reasonable excuse for an unpicturesque garden; money is often lavished upon it, and it receives the best attention from skilled cultivators. There is not a suspicion of art in the arrangement of anything, and the gardener is expected to spend most of his time in nourishing his plants, often curbing their freedom of growth, and sometimes forcing them into artificial appearances. What we want is a revolution in the typical garden. The grounds around the villas and cottages of our summer resorts need the same kind of attention from good landscape-gardeners as the houses themselves have already received from distinguished archi-

itects. The beautiful house is rarely set in the midst of a beautiful garden; we see everywhere the prim order and conventionality of Tulip, Pansy, Geranium and Coleus beds. Why do we not see more of the annuals, for example? Where are the beautiful Poppies, Marigolds, Phloxes and Trailing Nasturtiums that were familiar to us in our grandmothers' gardens? Possibly it does not occur to us that we do not take the same personal interest in our flowers that our grandmothers did! But this is the fact, nevertheless.

Regarding either formality or informality in arrangement, two or three principles of good taste must be observed. The plan of the garden should distinctly connect itself with the house and its style of architecture. The lawn should be a plain stretch of green, and not a setting for vivid flower-colors geometrically arranged. The ground-plan of the garden-beds is of secondary importance compared with what is called, in perspective drawing, its "picture plane." In other words, the color and form of a Lily projected in relief against a dark background are of more importance, artistically considered, than the shape of the bed in which the Lily grows.

Nature suggests formality in many plant forms—Mari-



Fig. 42.—Poppies and their background.

golds, Asters, Hollyhocks, Balsams and Cockscombs; there is no reason in massing these so their figures are lost in a confusion of foliage. Phlox, Coreopsis, Larkspurs and Sweet Williams; these have no symmetry to lose, and they can be arranged in groups to suit their immediate surroundings. But who considers the surroundings of his flowers? Imagine a careful planter sitting down before a plan of his garden and studying an arrangement for its purple and yellow, or its scarlet and white! It would, indeed, be an effort of imagination; not one of us ever saw the thing done.

Few persons realize the need of white in the garden; it ought to hold ascendancy there. The white Aster and the yellow or the orange Marigold are quite companionable. Sweet Alyssum and white Candytuft are adapted to fill in between larger, high-colored flowers which might otherwise conflict. The Calendula is also a fitting neighbor for white Candytuft, and the yellow and white Eschscholtzias are boon companions. Yellow and white are always beautiful when associated together.

Monotony is intolerable; nothing is so deadening in its effect upon one's happiness in life; if the flower-garden

contributes toward that happiness, there is no room in it for tedious monotony. Is it necessary to draw attention to the fact that, with few exceptions, the grounds surrounding our suburban homes are monotonously alike? Why is it that we relish the very mention of an "old-fashioned garden"? Until we fill our modern gardens with some of the variety which characterizes the old-fashioned annuals, it is to be feared that private and public flower-gardens will continue to be uninteresting. It is erroneous to suppose that people have lost interest in such flowers as Dahlias, Hollyhocks, Sunflowers, Larkspurs and Nasturtiums. As for Poppies, few of us are personally acquainted with the specifically beautiful types, and, of course, we cannot admire them. A broad bed of beautiful Poppies, which flutter gracefully in every passing breeze, is not to be displaced by a carpet-patterned bed of *Pelargonium* and *Centaurea gymnocarpa*, without the loss of something essentially æsthetic! The effect of scarlet and white Poppies in brilliant sunlight, relieved against a background of shady green foliage, is incomparable.

Unfortunately our garden-flowers are arranged too much—or rather, the arrangement is entirely of the wrong kind! But we are all apt to quarrel about methods; suppose we let them go for the nonce, and, figuratively speaking, paint the garden on Nature's own canvas. This is not so difficult a thing to do as we may imagine; but we must first lift our eyes from the brown-earth patches and fasten them on the "ground" of hazy-blue horizons, masses of green foliage, picturesque bits of architecture, and garden gates and walls! If the garden is a picture, then these objects form the best part of the background on which we must work.

Boston, Mass.

F. Schuyler Mathews.

Botanical Notes from Texas.—XX.

EAGLE PASS, a city of about 3,000 inhabitants, lies on the banks of the Rio Grande River. It is about midway between the twenty-eighth and the twenty-ninth parallels, as it is about midway between the one hundredth and the one hundred and first meridians, and is about 800 feet above the level of the Gulf.

Between effects of drought and depredations of barbarian goats ordinary plant-life in this region has suffered to an extent that renders successful botanizing here a slow process; still, under even such unfavorable conditions, there is much that is interesting to be found along the streams, along the railways and in the few cultivated fields.

Cevallia sinuata is a marvel of south-western botany. Imagine, if you please, a pleasant-appearing plant with a profusion of basal stems that sometimes form a mass of vegetation three feet in diameter and as many feet tall; its stems, covered with a white shreddy bark, and bearing numerous narrow, sinuately pinnatifid, sessile alternate leaves; the stems becoming pedunculate, and bearing at their summits clustered flowers, with a calyx of five greenish sepals, a corolla of five yellowish petals and five stamens and a solitary pistil, all more or less silky plumose—the whole plant covered with a double set of stinging hairs—and you will hardly miss the species that you are looking for. Nature seems to have exhausted her energies in the effort, and, so far as known, has been able to make only one *Cevallia*. All botanists, however, are glad that she succeeded in making even one, so remarkable and distinct from all other plants.

Schæfferia cuneifolia is common on the slopes around the city. As seen here it is a smooth, unarmed, low shrub, with small, pale green, obovate leaves, strongly veined on their under surfaces. Its fruit is a small bright red, two-celled, and two-seeded drupe, which is compressed and grooved between the seeds. I have not seen *Schæfferia* east of Uvalde. *Forstiera angustifolia* abounds throughout the lower Rio Grande region. It is common here in ravines. In this species, as in others that we have noticed, the yellow dominates the blue of the green in the leaves, and gives to them an ochreous tint, which assists in the easy recognition of the species. Its small, ovate, black fruit is edible.

One of the commonest shrubs around Eagle Pass is *Condalia spathulata*. The species is as wicked as it is common. Each one of its branchlets terminates in a long brown spine, which is nearly as fine and sharp as a needle. To say that our shrub

is nearly goat-proof tells the whole story of its meanness. Its pleasant fruit is similar in form, although smaller, to that of *C. obovata*, which is also here. A handsome *Acacia*, very like in foliage, flowers and general habit to its nearest congener, *A. Farnesiana*, but in its ways of living giving assuring evidence of being native-born, is *A. tortuosa*. Like most Texan members of the genus, it prefers the richer and damper soils. When in fruit it may readily be distinguished from our other native species of *Acacia* by its long, flattened, curved and pulpy pods.

Most of our species of *Dalea* are noted for their good looks. But none of them are handsomer than the tiny shrubby species whose specific name constantly reminds us of its beauty, *D. formosa*. The time of my visit here was too late to see it in the fullness of its flowering; the few flowers which remained impressed me with their remarkable beauty.

In all south-western Texas, from about the ninety-seventh meridian to the Rio Grande, the most abundantly growing *Acacia* is *A. amentacea*. It has given itself only one pair of pinnæ, which bear three or four pairs of leaflets, that crowd and overlap each other. Its flowers are borne in short oblong spikes. They are succeeded by a profusion of small, rounded, curved pods, which are inclined, sometimes with success, to become moniliform. In this species of *Acacia*, as in the common China Tree, and in many other trees and shrubs, the blue is much stronger than the yellow in the green of the leaves, which gives to them a hue so dark as to make the hills, whose slopes the species often covers, appear black in the distance. It is this characteristic which has given the species the significant common name of "Black Brush." A spreading small-flowered *Melampodium* is here in cultivated fields. *Riddellia tagetina*, a rather handsome composite, with bright yellow rays, bears it company. The last-named species extends northward to southern Kansas, where, in May, the prairies of Clark County are yellow with its flowers.

Extra-limital is a term which has become fashionable among younger botanists. It is often used by those who ought to know that they are using it with little propriety. Our knowledge of the distribution and range of plants is constantly increasing. Almost daily a remote and hitherto unknown station for some species is discovered. It will soon be known that few or none of our species are as restricted in their range as the boundaries of a state. Wherever a species grows naturally, and by naturally is meant disseminated without human agency, and even then, if that fact be unknown, is the range of the species. If found beyond its hitherto known range the plants are no more extra-limital than the others. Some one has extended the known range of the species by discovering a new station for it. That is all. *Cyclanthera dissecta* grows commonly in extreme northern Kansas. It grows throughout the intervening country to Guatemala, according to S. Watson. Are the plants of that species growing in northern Kansas, or those growing in Guatemala, extra-limital? Or was Texas or Mexico the original seat of the species, and was it disseminated by its burr-like fruit carried both northward and southward, in the hairy coats of emigrant buffaloes? All there is of it is the fact that the known range of the species is from Guatemala, at least, to the fortieth parallel, or near it, in Kansas.

Large and vigorous individuals of *Passiflora foetida* grow on the banks of the ravine running through the city. The Texas range of this tropical species, as now known, embraces the region south and west of a line extending from Eagle Pass to Beeville and Copano Bay.

The species of *Perezia* have acquired by heredity, or by atavism, the strange freak of developing tufts of wool at the base of their stems underground, or along their stems above ground. The wool borne by *P. Wrightii*, which is also common around Eagle Pass, is fulvous. The spongy root of this species, with the wool it bears, is sometimes used in domestic practice to stop the flow of blood in new-made wounds.

At Uvalde, and more commonly on the sandy bars of Nueces River, *Hymenoclea monogyra*, a peculiar and handsome composite, grows in great abundance. It is a smooth plant, furnished with linear leaves, and capable, under favorable conditions, of attaining a height of three to five feet, though it is usually less tall. Its flowers are produced in great profusion—the sterile ones in little clusters, which are surrounded by a whorl of whitened membranous scales. The usually single fertile flower has a similar involucre attached to the flower itself. The little white scales of the involucre appear like rays and give the species at anthesis a unique and attractive appearance.

Eastern *Rubus trivialis*, *Mitreala petiolata*, *Cissus incisa* and *Cissus stans* reach the Rio Grande at this point.

Eagle Pass, Texas,

E. N. Plank.

Foreign Correspondence.

London Letter.

CYRTANTHUS O'BRIENI.—This is a new species named by Mr. Baker in compliment to Mr. James O'Brien, of Harrow, who recently introduced it from Natal, and who has done much to restore many of the beautiful, but now neglected bulbous plants of South Africa to the favored position in English horticulture which they held fifty years or more ago. The genus *Cyrtanthus* is an interesting one, all the species being pretty in flower, and their only drawback is the difficulty experienced in keeping them in good health in cultivation. There are, however, a few species which are as easy to manage as *Lachenalias*, and *C. O'Brieni* is one of them. It is near *C. angustifolius* and *C. MacOwani*, and these are near the common *C. McKenii* and *C. lutescens*. The new one bears tubular, bright, pale scarlet flowers in umbels of five to eight on slender scapes about a foot long. The leaves are linear and like those of *C. McKenii*.

LICUALA GRANDIS.—This is a handsome Fan-palm, which was introduced about twenty-five years ago from the Solomon Islands by Mr. W. Bull, the Chelsea nurseryman, and distributed by him under the name of *Pritchardia grandis*. A large specimen of it was for some years a striking object in the Palm-house at Kew, where it flowered a few years ago, and was figured in the *Botanical Magazine*. The habitat of *L. grandis* is a very restricted one, and hitherto it has not been possible to obtain seeds of it in quantity. Two years ago, however, about fifty good seeds were received at Kew, and from these some good plants were raised, and I see from an advertisement that a quantity of fresh seeds have lately been procured. The distinct and elegant form of the leaves of *L. grandis* and its good behavior under ordinary stove treatment are sure to make it popular everywhere with growers of Palms.

NEPENTHES RAJAH is a most difficult plant to manage. Possibly some American grower of these plants who has succeeded with *N. Rajah* can give us a few helpful suggestions. The only plant I have seen that may be called healthy and a success is in the Glasnevin collection, where Mr. Moore grows it with his *Masdevallias*. I saw the plant last year after it had been with the *Masdevallias* four years; it was nearly two feet high, well leaved, every leaf bearing a pitcher, and the leaves in some cases five inches wide. The pitchers, however, were small, nothing like as large as "quart-jugs," as they are reputed to be on the wild plants on the mountains of Borneo. A cool-house *Nepenthes* is as much an anomaly as a cool-house *Æschynanthus*, which, however, we now possess, the *Æ. Hildebrandii*, noted by me a few weeks ago, being, according to Mr. Hildebrand, a turf-like mass of short stems, studded all over with scarlet flowers clinging to the thick tree-trunks in the frost region of the Shan states, in upper Burma.

SAUROMATUMS.—A border filled with several species of *Sauromatum* is an object of exceptional attraction and interest at this time of year. It is on the south side of a tropical-plant house, from which, probably, it gets a little warmth in winter; otherwise it is exposed to the weather, summer and winter. The tubers are buried six inches below the surface, and from these there spring in May or June the singular flowers, at first a straight green rod a foot long, which gradually unrolls and reveals a long fleshy purple spadix, which curves over till its tip touches the ground; the spathe is strap-shaped, curled, a foot long, green outside, greenish-yellow with purple blotches inside. As to the odor—well, we will hold our nostrils and say nothing about that. After the flowers, come the handsome pedate leaves on tall spotted snake-like stalks. These die down in autumn and are succeeded by cone-like clusters of crimson-purple fruits pushed up just above the soil. The species thus grown are *S. guttatum*, *S. punctatum* and *S. pedatum*. They are all Himalayan.

RUBUS DELICIOSUS.—This Rocky Mountain bramble is probably a common garden-plant in the United States, but in England it is scarcely known, notwithstanding its hardi-

ness, the beauty of flowers, its free growth and the early date of its introduction—1822. Planted in groups on the border of a shrubbery, or in a bed on a lawn, it soon forms an ornamental mass of Raspberry-like stems, which, in early summer, are clothed with pure white rose-like flowers two inches in diameter. It is the most ornamental of all the species of *Rubus* known in cultivation here, and if not appreciated in America as a garden-plant it ought to be. At Kew it used to be grown in poor soil from a belief that rich treatment was bad for it, but a group of it, raised from layers two years ago, now fills a space of about forty square yards, having grown rapidly in the rich loam in in which it is planted, and the canes, some of them seven feet long, are wreathed in flowers.

The Advertisement Plague—an American invention, I believe—has grown and spread so rapidly in England within the last few years, to the defacement of country and sea-side scenery (we have grown used to it in towns), that efforts are about to be made to put a stop to it by act of Parliament. The Prime Minister lately expressed, what every one who travels by rail in England must feel, alarm at the number of large, ugly boards that are set up often in the most conspicuous places in the landscape, and which not only destroy the most picturesque scenery, but also keep one constantly in mind of his liver or stomach. One cannot, nowadays, take a run into the country without being reminded twenty times on the way of his ailments by these glaring advertisements. The advertiser has defaced all the station walls, the hoardings and gable ends of town buildings, and now he is spreading himself all over our fields and woods.

English forests are at last receiving the attention for which they have been crying out for many years. Their condition is being looked into and the work done in them criticised—foolishly as a rule, it is true, still adverse criticism is better than no notice at all. Sir John Lubbock has recently recommended that the Government ought to take the matter up and preserve such forests as we boast of. What we in England call forests are, of course, very different from what you call by that name. Ours are large areas given up entirely to arboreal vegetation, and not with any view to the production of good timber. Such are the Epping Forest, which has been called the playground for the inhabitants of East London, and the New Forest, in Hampshire. But the trees in these will wear out in time, and what is needed is judicious thinning, the removal of worn-out trees and the planting of new ones. Our forests and woods are too precious to be allowed to run to waste without protest.

INDOOR GARDENING.—The cultivation of plants which require to be kept in glass houses is, I believe, on the decline, in England at any rate. Gardening has made enormous strides within the last twenty years, but, if we except Orchids, it has been only with open-air gardening. Even the Orchid fever is cooling, so far as tropical species are concerned, the demand now being for those sorts which can be grown in a cool house. The discomfort of the plant-stove is too much for most people. Fruit must be grown, and we shall always have forced grapes, cucumbers, melons, pineapples, etc., but plants which merely please the eye are certain to decline in favor if they cannot be grown without stove-heat. No doubt, the fault is partly in the crude and unattractive methods adopted for indoor gardening; the pipes, the ugly stages, the flower-pots, the formal arrangement, all so artificial and inartistic. Reform is needed if we are not to give up tropical gardening altogether. In those houses where the plants are planted in borders, where few or no flower-pots are used, the effect is better and the plants are often healthier. English outdoor gardening has improved because it has been largely remodeled and everything formal and ugly has been removed. Our borders of hardy flowers, rock-gardens, groups of shrubs and trees, beds only when they can be made to have a natural or artistic effect—these are in the right direction. But the ordinary plant-house is, it

must be admitted, ugliness itself. We want glass structures that will not interfere with a pleasant natural arrangement of the contents and in which the needs of the plants can be supplied without the use of the stage and the flower-pot.

London.

W. Watson.

New or Little-known Plants.

Phlox divaricata.

THIS pretty plant, which bears on leafy stems broad open clusters of lavender-colored or pale blue flowers an inch in diameter, is an inhabitant of damp rich woods in eastern North America, where it is found from western Canada and New York to Florida, Iowa and Arkansas. It is one of those beautiful North American plants which are better suited than those of any other country to grace our gardens, but, in common with many other North American plants, it is almost unknown to American gardeners, although a century ago it was considered in England worthy of a portrait in the *Botanical Magazine*.

Like the other dwarf species of Phlox, *Phlox divaricata* is seen to its best advantage in the rock-garden or in some other half-wild spot where it can obtain protection from the intensity of the summer sun in the overhanging branches of deciduous trees, and, like the other species, it enjoys deep, rich and well-drained soil, in which it will soon spread into a broad mat by the decumbent sterile shoots which it produces at the base of the upright flower-bearing stems. The flowers appear in very early spring.

We are indebted to Mrs. J. H. Robbins, of Hingham, Massachusetts, for the specimen from which Mr. Faxon has made the drawing reproduced on page 256 of this issue.

Plant Notes.

IRISES.—Of Irises now in flower *I. ochroleuca* is the most striking, and is really one of the noblest and most effective of the family. The leaves are some three feet tall, and above them are borne the handsome white flowers with yellow claws. It flowers with considerable freedom. *I. cuprea* is one of the most distinct species, with dull brown or coppery flowers, the falls of which are spread laterally. It is most satisfactory in a somewhat moist situation. *I. Anglica* follows the Spanish Irises, with an entirely different effect. The flowers are larger, but more quiet in color, ranging from white through the mauves to dark rich purple. The bulbs of this Iris enjoy a somewhat moister situation than the Spanish. *I. spuria* is one of the taller sorts, vying in that respect with *I. ochroleuca*, but its lilac-colored flowers are not nearly so effective.

ARTHROPODIUM CIRRHATUM.—This Tasmanian plant is now finishing its flowering. It has broad spreading leaves, and bears in spring divided racemes of pure white star-shaped flowers, which are about an inch in diameter, and whose petals reflex. The yellow stamens are very prominent. The flowers are persistent, and the plant retains a good show of bloom for two months. It is increased by seeds or offshoots. It is a good greenhouse-plant, though not of first rank.

ALSTRÖMERIA HEMANTHA.—This is one of the prettiest of the "Lilies of the Incas." It is hardy in this latitude in sheltered places, and at this time bears divided racemes of beautiful salmon-pink flowers. The pointed inner segments are marked handsomely with linings of blood-red. These flowers, besides their beauty in the border, are very useful and lasting in a cut state.

Cultural Department.

Current Notes for Chrysanthemum-growers.

CHRYSANTHEMUMS intended for specimen blooms should all be planted by the end of June. As suggested in previous notes, ten inches each way is not too much space for them; but, for general decorative purposes, later

and closer planting will do. Experience has shown that it is better to rely on field-grown plants for stock for this purpose, and a sufficient number, should be set in the open ground. Frequent overhead syringing on bright days is beneficial, since it helps to keep down insect pests. Three pounds of tobacco-leaf, with an ounce of sulphide of potassium, to ten gallons of water, makes an excellent insecticide and fungicide as well. Some plan must be adopted for supporting the plants, and that of stakes with wire for stiffening or strengthening, now generally in use by Rose-growers, is most practicable.

In July many varieties will show a premature crown-bud, known as the July bud; and, excepting a few early varieties, notably Mrs. E. G. Hill, Lady Playfair, Mayflower, Mademoiselle Lacroix, Yellow Queen and Lady Selborne, which may be taken toward the end of the month; all such should be discarded, and one of the two or three terminal shoots, which appear immediately below it, allowed to grow. The crown-bud is an abortion, at best, and if left to itself could never develop. It is only when the terminals or laterals are taken away, which process is known as "taking the bud," that they develop. When it appears at the right time for a perfect flower, then it should be "taken." Most varieties will produce a perfect flower on either bud, but unless one has a pretty sure knowledge of the proper time for taking the crown, it is best to trust to a terminal bud. In seedlings the terminal is the surest test of their true character. E. Molyneux is altogether out of character on a terminal bud, and it requires very careful management to have the required crown at the right time. English experts take into consideration even the time of striking their cuttings, and this also varies with locality, north or south. About the 10th of August is the right time here for this variety; and as all buds appearing before or after are useless, they may as well be replaced by others. There are very few varieties, however, which are so far out of character on a terminal; those best on this bud being far more numerous. G. W. Childs, Vivian Morel, L. Canning, Ivory, A. H. Fewkes, Wanlass, Joseph H. White, Etoile de Lyon and W. H. Lincoln are all best on terminal buds.

Wellesley, Mass.

T. D. H.

The Calochorti.

THESE plants have flowered successfully here this season, and well deserve mention. These California bulbs are found in widely diverse localities in that state, but in none where conditions of climate do not differ widely from those prevailing here. Hence, aside from their beauty, they may be classed among interesting plants—that is, from a gardening point of view—somewhat difficult to cultivate successfully. None of the species occur in sections where the winter temperature sinks as low as it does in this latitude, but except, possibly, *Calochortus Kennedyi*, they are hardy here. This variety has not been tested as severely as the others, but has survived some freezing in pots without injury. The other kinds, including *venustus roseus*, *venustus Vesta*, *Weedii*, *splendens*, *pulchellus*, *albus*, *lilacinus*, *Gunnisoni*, *purpurascens*, *amœnus*, etc., were tested last season under hard conditions, and have survived and mostly flowered freely. Last year they were in a warmer place, which proved to be too dry at flowering time, at which season an ample supply of water seems to be essential, or they go to rest without perfecting their flowers. My bulbs late in summer were planted about four inches deep in the most exposed border, which is of heavy clayey soil. A covering of boards was placed over the bed, and about a foot above it, to throw off surplus water and to prevent the thawing of the ground during short spells of warm weather in winter. The leaves appeared above ground in February, and were not affected by subsequent freezings. The boards were removed early in March and full exposure was given. The "Star Tulips" seem to be the earlier, the *Mariposas* being noticeably later. As these bulbs are accustomed to a perfect rest in summer, the proper treatment after flowering is to elevate a cold-frame sash over them or else lift them and store them in sand for fall-planting. Of course, the bed containing the bulbs should be elevated, so that water will not rise much from below.

The Calochorti are mostly very beautiful flowers, well worth some care. If a cold frame could be devoted exclusively to them it would often be more satisfactory, as there would be less danger of the bulbs being lost in summer, though the bulbs are cheap and easily replaced. The frame should be elevated, and the sash opened, but tilted to shed water in win-

ter. In July the frame should be covered tightly till late fall, when the bed would require watering and thorough ventilation. *C. pulchellus* is the yellow Star Tulip, the inner petals of which are folded. *C. amoenus* is a charming rose-colored

posa Tulips are, however, the gems of the family. The best of these flower on very slender stems about fifteen or eighteen inches high, on which they sway gracefully in any light breeze. *C. venustus* Vesta is rather the handsomest white, the flowers,



Fig. 43.—*Phlox divaricata*.—See page 255.

form, the inner petals being darker than the outer. *C. albus* is rated as a Star Tulip, but is of a different form, ball-like in flower, with pure pearly white petals. *C. lilacinus* is a dwarf cup-shaped flower of a clear lilac color and curly. The Mari-

some four inches in diameter, opaque-white, with abundant pheasant-like markings at the base, and some suffusion of rose on the outer side. Like the other varieties, they have abundant hairs on the markings. *C. venustus* roseus is also white,

with deeper suffusion of rose, and with a bright rosy blotch in the centre of each petal. *C. Gunnisoni* is another white flower, with greenish outer suffusion. There are other white varieties with differences in the markings, but similar to those described. All these white *Calochorti* retain their coloring for three or four days, after which the color begins to deteriorate. Mr. Carl Purdy sent me as a new species a flower of the same size as these, of a bright clear yellow with slight red markings. *C. splendens* is somewhat smaller, of a clear lilac color. It will be seen that there is abundant variety of good flowers in this family. Curiously enough, the California *Brodiaeas*, which take their chances in a mixed border, seem thoroughly reliable, and at least hold their own under adverse conditions, and with no protection at any time.

Elizabeth, N. J.

J. N. Gerard.

Useful Decorative Ferns.

IT is a problem for the gardener how to find plants suitable for grouping in recesses of corridors and similar places where the conditions are unsuitable for plant-life. No plants will endure these conditions for any length of time, and they require to be changed frequently. Among Ferns there are quite a number that do remarkably well in such places, and if those of easy cultivation and quick growth are selected it is not so difficult a matter to keep up sufficient stock. *Adiantum cuneatum* and the bolder-growing variety *Decorum* are both indispensable. The *Asplenium* family furnishes several fine forms for this purpose, and *A. bulbiferum* and *A. falcatum*, with their broad, arching fronds, are desirable. These are both easily raised from little plants which are produced on the upper surface of the old fronds. *A. Belangerii* is more erect in habit and has narrower fronds, and produces young plants in the same way, but not so freely.

Among the *Gymnogrammes*, *G. chrysophylla*, the golden form, and *G. tartarea*, the silver form, are the hardiest and most useful for decoration. *Nephrolepis davallioides furcans* is a beautiful and distinct crested form of robust growth. *N. exaltata* is also a free-growing and handsome variety, both highly suitable for decorative purposes. The fronds of *Onychium Japonicum* are light and graceful and endure well.

The *Pteris* family supply more useful varieties for decorations than any other family of Ferns. *P. Victoria* is one of the finest of cultivated Ferns; a broad, irregular band of silvery white runs through the centre of each frond and gives the plant a striking appearance. *P. cretica albo-lineata* is also variegated, and is especially useful when small; there is a handsome crested variety of this *Pteris* which is equally free in habit. *P. nobilis* is a beautiful crested form with broad fronds and upright habit. There are several varieties of *P. serrulata*, all more or less crested, and all distinct in appearance. The old *Pteris tremula* is indispensable for decorative work; its bold light green fronds always look well in groups. *P. tremula Smithiana*, the crested variety, is a beautiful plant and a free grower, but the habit is rather stiff. All these Ferns grow freely from spores, with the exception of the *Aspleniums*, which are propagated more rapidly from the little plants produced on the surface of the old fronds.

New Dorp, Staten Island, N. Y.

William Scott.

The Hardy Flower Garden.

THE Lupins are about past, and the only remaining relative is *Thermopsis Caroliniana*; this would pass for a yellow Lupin to a casual observer when in bloom, but the resemblance ends with the flowers, the foliage being entirely distinct. Gray tells us that the name *Thermopsis* is taken from Greek words meaning resemblance to a Lupin, and the species under note is a native of the mountains of North Carolina. To the gardener the plant is of interest for its bright yellow blossoms and tall habit, for when fairly established it grows tall enough to be put at the back of the widest border, and, like all plants of the family *Leguminosæ*, should never be disturbed when once planted. It is preferable to start with a small plant or seed rather than to plant larger roots that resent disturbance.

We have had a plant under the name of *Baptisia exaltata* in the garden for several years, and it is quite the best of all the *Baptisias*. It is a tall-growing kind, as tall again as the better known *B. australis*, with flowers proportionately larger and of a brighter blue. It is a fine garden-plant. The seed came originally from Kew, and *B. exaltata* appears to be well known in England, but, though the genus is North American, I fail to find any reference to it in any of the text-books at hand. It may be of garden origin, but those having access to *Sweet's*

British Flower Garden can possibly ascertain more about the plant, as it is figured in that work.

Thalictrum Fendleri is the showiest of all the Meadow Rues when in bloom, though the foliage is not so finely cut as some of the others. It is very rare in cultivation, and is a native of the Rocky Mountains. In habit it is not so tall as the common Meadow Rue of the eastern states. It seldom exceeds two feet in height, and is remarkable for the beautiful white flowers that are profuse in their season. Our plant has formed a nice clump now, and is a pretty object every summer at this time. *T. Fendleri* is one of the choicest border-plants, and it is a pity that it is not more often seen.

The *Centaureas* have a rather bad reputation as border plants, and few are really good, especially those of perennial habit. *C. Ruthenica* is a notable exception, being elegant in all its ways. Our plants were obtained from seed supplied by Haage & Schmidt, of Erfurt, but the plants produce seed sparingly each year now that they have begun to bloom freely. *C. Ruthenica* is one of the most beautiful hardy foliage-plants; the leaves resemble those of the *Cocos Weddelliana*, being finely cut and of a deep green color. The flowers are pale yellow in color and last some time in blossom. Our plants are seldom out of flower during the next two months from this time. It is one of the uncommon hardy plants that are well worth having; judging from the name it is a native of Russia.

Salvia argentea is not usually regarded as a hardy perennial plant. It is often treated as an annual for the beauty of the foliage, which is covered with a silky down; under this treatment half the beauty of the plant is not seen, for it is the finest hardy *Salvia* of all when in bloom, and when not flowering it is worth having for its foliage alone, as already stated. We have had it in the garden for three years and it has taken care of itself in common with the other plants. It was originally planted for the one season's effect, but it has lived through each succeeding winter, bloomed regularly, and is now beautiful. The flowers are pure white on large branched panicles. It is much superior as a garden flower to *S. pratensis*, or even the so-called hardy native species *S. Pitcheri* and *S. farinacea*, all of which are tender in cold seasons.

South Lancaster, Mass.

E. O. Orpet.

The Vegetable Garden.

WEEDS will make great headway in this growing weather, and the hoe and cultivator must be in constant use in the vegetable garden. Where the ground is hard it will not answer to skim over the surface with the hoe, but it should be deeply and thoroughly worked at once. After such a hoeing it is best to rake over the ground so that weeds like Purslane, which die hard, can be cleared off. These should not be left in heaps to dry up and rot at the ends of the rows, for such heaps have a very untidy, not to say slovenly, look.

The main crop of Celery should now be set out, and as between planting on the level of the ground and in trenches, we have always had the best success with the latter. The earlier plantings should now be growing nicely, and they should never be allowed to stop. In dry weather they should be soaked with water every three or four days, and if a mulching of spent mushroom manure or lawn cuttings can be given, this will help to retain the moisture and keep the roots cool. Celery should never be planted except in moist ground; or when rain seems imminent. Fairly good heads can be secured from plants which are set as late as the end of July, but in this case they should be planted in rich compost and water should be given unstintedly.

The early crops of Peas, which have done unusually well this year, are now cleared off and the ground is utilized for Celery, late Corn or Rutabagas. The succession crops of Peas are helped by mulchings of grass between the rows. Sowings may be made now and for a fortnight longer for late crops, for which purpose the second early kind are the most suitable, McLean's Advancer being one of the best. Succession sowings of Bush Limas and String Beans will yet ripen for late crops. Pole Beans should be looked over occasionally and tied up where needed. Tomatoes, where grown on trellises, should be examined once a week and kept properly tied, and the laterals removed where they are not needed. A mulching of short manure is very acceptable to these plants. From plants grown in six-inch pots and transplanted we are now, on the 20th of June, gathering well-ripened fruit. For winter-fruiting, sowings of seed can be made about July 10th, and these plants will give fine fruit early in December if grown in a suitable situation. We have found no variety as good as Nicholson's Hybrid for all-round winter use.

Cucumbers may be sown at intervals of a fortnight up to the middle of July in the open ground. Plants of the English frame varieties in houses or frames should have soakings of liquid manure twice a week, and Lettuces, if similarly treated, will pay for the extra labor. Sowings of Lettuce every ten days should not be neglected. If White Okra and Martynia have been overlooked it is not yet too late to put in a sowing of them. Melons, Squashes and Cucumbers, while young, must be examined daily while in a growing state. We have found tobacco dust an excellent preventive of the squash-bug, but it should be sprinkled upon the lower sides of the leaves as well as the upper side, or the work of destruction will continue. Egg-plants will be devoured while young by potato-bugs if they are neglected. The best remedy in this instance is hand-picking.

During moist weather plant out Brussels Sprouts, Savoy and Curled Borecole. Sowings of Cauliflower, Borecole, Beet, Sweet Corn and Turnips are still seasonable. Leeks, when of sufficient size to handle, should be planted out nine inches apart in well-enriched ground, and if the weather is at all dry the young plants should be watered well. The fact is that no vegetable-garden is satisfactory unless it has a good water-supply. If the ground is properly piped and hydrants are placed as they should be, a hose and sprinkler can usually be kept running constantly in different parts of the garden with benefit to many of the crops. A vegetable-garden, with a good soil and exposure and all the needful appliances, may be made quite as beautiful as any flower-garden and quite as interesting to any intelligent cultivator.

Taunton, Mass.

W. N. Craig.

Work in the Conservatory.

DURING June and July plants in the conservatory take up greater quantities of water than at any other season, if they are in a healthy condition, for root-action is now rapid, and the nights being also drier than they are later in the year, more frequent syringing should be given.

In a house chiefly devoted to foliage-plants a light syringing two or three times a day during bright weather will help to protect the foliage from the danger of wilting, a danger to which a healthy plant is always liable when moisture is lacking at its roots or about its leaves.

The proper attention to details of watering, syringing and ventilation is often of more consequence than the compost in which a plant is potted, though I believe in paying attention to soil as well. The attacks of the various insect pests can also be controlled to a certain extent by the free use of the syringe, red spiders and thrips, two dangerous pests, having a special aversion to water. If thrips are discovered on Palms a sponging with a mixture of whale-oil soap and tobacco-water will usually dislodge them; and for red spider a solution of tobacco, with the addition of some sulphur, is one of the best remedies.

On foliage-plants with soft leaves, like Cyanophyllums, Sphærogynas and Dieffenbachias, mealy-bugs and various scale insects are the most dangerous enemies, and these should be promptly removed with a sponge, a camel's-hair brush or a pencil made from a piece of soft pine-wood, as the case may demand.

Cyanophyllums and Sphærogynas are among the most effective of foliage-plants for a warm house, but they require considerable pot-room for their best development, and if allowed to become stunted at any time it is useless to grow them on afterward in the hope of securing perfect specimens.

Among flowering plants there will be great activity at this season, especially among the Begonias and various members of the Gesneriaceæ families, which contain many of the best summer bloomers. Besides the Tuberous Begonias, which have been so wonderfully developed of late years, *B. Bolivienensis*, *B. Chelsonii*, *B. Sutherlandii* and *B. Weltoniensis* are all admirable, and so is the more rare *B. Froebelii*, whose Cineraria-like leaves and large, brilliant scarlet flowers are most attractive. The *Gloxinias* will also require some attention, though many of them will doubtless be in their blooming pots by this time. A good strain of seed of *Gloxinia crassifolia* can be secured from any reliable seedsman, but special varieties must be perpetuated by means of cuttings, and these are made after the same manner as those of *Rex Begonias*, being either whole leaves or portions of leaves inserted in sand in a shaded house. *Gesnerias*, *Tydias* and *Achimenes* should also be progressing nicely toward the flowering stage, and will require a good deal of water, though, like other members of this family, they prefer the water at the root only, and do not require frequent syringing.

Holmesburg, Pa.

W. H. Taplin.

Correspondence.

The English Flower Show.

To the Editor of GARDEN AND FOREST:

Sir,—I read with unusual interest Mr. Watson's account of the Temple Show of the Royal Horticultural Society in your issue of June 6th, because it chanced to be my privilege to see this exhibition, and perhaps it may interest your readers to know in a general way what impression the display left when seen through American eyes.

The site of the exhibition was on a lawn of about four acres in the Temple Gardens, on the Thames Embankment—that is, in the very heart of London. Of course, both plants and visitors would need shelter even in a climate where it is not likely to rain every day, and five large tents, covering some 30,000 square feet of space, were erected for this purpose. Even this space proved too contracted for the exhibition, which had a general appearance of being crowded. Of course, where it is necessary to separate the plants into five distinct groups, and in different enclosures, there can be no opportunity for a general disposition of the material so that it can all be commanded at a single view. Consequently, no such magnificent spectacular effect was possible as I have seen in Madison Square Garden, for example; but, after all, since plants in such an exhibition are shown for their own sake, and not for the purpose of decorating the enclosure in which they are exhibited, the loss of this general effect is not serious. But even if it had been desirable as a study in artistic arrangement, to attempt any comprehensive picture, the material for such work was not at hand. Specimen Palms, Tree Ferns and similar plants which would be necessary for the appropriate decoration of a large hall were altogether lacking; nor were there any splendid masses and groups of decorative plants as I have often seen at exhibitions in Philadelphia and New York.

On the other hand, the Temple Show was altogether superior to our American exhibitions, not only in the number of plants exhibited, but in their variety and in the general cultural skill they showed. Of course, the exhibition was specially strong in Orchids. We have admirable collections of these plants in America, but they are widely scattered. Here there were twenty-five exhibitors of Orchids, all within easy transporting distance, including the owners of the most noteworthy private and commercial collections in the United Kingdom, and they brought together an immense number of choice plants whose money value could be counted by tens of thousands of dollars. Individual Orchids have been shown at American exhibitions which were equal, perhaps, to any shown here, although one rarely sees anywhere such a plant as Baron Schroeder's *Cœlogyne Dayana*, with its thousand flowers hanging in long racemes of fawn color and purple, or the magnificent *Oncidium ampliatum majus*, of Messrs. Sander & Co., which had more than five thousand blooms, or Mr. Hardy's noble specimen of an intensely colored *Lælia purpurata*. Of course, there were many novelties which Mr. Watson has already given account of, but the admirable cultivation shown in specimens of the standard kinds was to me most interesting. It is impossible to conceive anything more attractive than the forms of *Odontoglossum crispum*, for example, which were shown in almost endless variety.

Hardy plants, in pots and pans, as well as their cut flowers, were shown in such profusion as I had never seen before at an exhibition, although there is no reason why these should not be a feature of equal prominence in our own exhibitions. Some exhibitors, like Messrs. Paul, of Cheshunt, and Backhouse & Sons, of York, used rock-work to display the plants suitable for such situations, but, as a rule, not much attention was paid to effective arrangement of the great masses of well-known plants like *Trollius*, *Saxifrages*, *Spiræas*, *Irises*, *Heuchera*, *Geums*, *Phloxes*, *Aquilegias*, *Pyrethrums*, *Delphiniums*, *Poppies*, *Hemerocallis*, *Pæonies* and *Alstromerias*. Many of these were shown in new and striking forms, besides many that we rarely see here, such as *Calochorti*, *Eremurus*, *Turban Ranunculuses*, etc. It reminded one of home to see neat little plants of *Clethra alnifolia*, which grows on all our swamp borders, flowering here in small pots, and a miniature Virginia Fringe-tree, covered with its lace-like flowers in the collection of Messrs. James Veitch & Sons. Here, too, was a beautiful plant of *Philadelphus microphyllus*, from our western mountains, which really looked more at home than it does out-of-doors here in the east. I have seen cut roses in our exhibitions which have equaled any in the Temple Show, but never anything like the number and variety of Roses, in pots, shown by the great growers. Every group showed admirable culture, and many of them were most taste-

fully arranged. I was specially struck with the plants of Mr. Turner's Crimson Rambler, perhaps because it was new to me, but specimens like those trained to tall pillars and glowing with bright flowers from top to bottom, can never become tiresome. Then there were marvelous blooms of Madame de Watteville on some of the standards shown by Messrs. Paul & Son, of Cheshunt; indeed, flowers so conspicuously beautiful that I wondered why this variety is not more generally grown in America. But space would fail to speak of half of the plants which forcibly arrested the passer-by and demanded examination—of the *Streptocarpus* and *Hippeastrums*, the *Gloxinias* and *Calceolarias*, the marvelous blue of *Leschenaultia biloba* major, shown by Balchi & Sons, the new *Fuchsias*, *Alströmerias*, *Daturas* and Javanese *Rhododendrons*, the wonderful group of hybrid *Philocacti*, the pure yellow *Calla Ellenleana*, and the giant *Lilies*.

But, perhaps, the best example of cultural skill in the whole show was a group of some thirty *Clematis*, trained to balloon frames, all in perfect form, in the best condition and just at their best bloom, not smothered with flowers, but each one bearing a sufficient number to be seen to the best advantage against a background of healthy leaves. The only group of plants which equaled these in perfection of culture were some fancy *Pelargoniums*, which I saw a few days later at the exhibition in Regent's Park. These had been grown by the Messrs. Turner, of Slough, in eight-inch pots, but they had developed into perfect hemispheres and were covered with flowers of the most perfect shape and distinct and brilliant markings. These are plants which of late years we rarely see in America, and it is a matter of regret that so few Americans have ever had opportunity of seeing specimens of such merit. Certainly these plants would be more generally grown than they are if it was only known how beautiful they could be made.

This exhibition of the Royal Botanical Society in Regent's Park, by the way, although much smaller than that in the Temple Gardens, left little to be desired in the way of arrangement. The ground is beautifully modeled, with an undulating surface, which rises gradually from the centre toward the rim of the great tent which covers it, and paths wind naturally about as in a miniature park, with the flowers set in groups on the turf. A general view of the whole can be had from the outer circumference, while from the centre one can inspect the slopes on either side, and the picture was altogether very pleasing. Exhibits here were made by the principal commercial firms, and there were many others of great merit from private gardens, among which I was especially impressed with that made by Mr. James Douglas, whose Orchids and cold-house plants were exceptionally good. It seemed to me an evidence of the healthy condition of horticulture in London and its vicinity that so complete and satisfactory an exhibition as this could be held within a week after the three-days' show at Temple Gardens and command so large an attendance, in spite of unfavorable weather. There was something like a crush of visitors at both exhibitions, and it seemed to me that the attendance would have been still larger if the exhibitions had been more effectively advertised. Indeed, I afterward met many Americans, not to speak of English men and women, who would have enjoyed the Temple Show if they had known it was to take place. On the morning after the opening day the principal papers gave extended and, as a rule, intelligent reports of the show, but this hardly made up for a lack of generous preliminary advertising. I venture this suggestion with some diffidence, for probably the Royal Horticultural Society needs no advice on such a subject from a casual traveler.

New York.

W. A. S.

Jackson Park, Chicago.

To the Editor of GARDEN AND FOREST:

Sir,—The wooded island is now the gem of Jackson Park, and will doubtless remain a prominent feature of its landscape-gardening, whichever of the plans for the permanent park improvements are finally adopted.

This island, with the smaller ones about it, is as attractive when seen from the outside as it was during last summer. It is skirted by a border of small trees, shrubs and herbaceous plants irregular in width and in outline. This border was one of the most artistic landscape features of the Columbian Exposition Grounds, and has been more than once described in GARDEN AND FOREST. Its plantations of small trees and of shrubs are increased by a year's growth, and all seem to have prospered, while the herbaceous plants, interspersed throughout its inner side, have generally increased greatly—even surprisingly, when the conditions are considered, for the drought of 1893 was almost unprecedented, and the available

supply of water on the island by no means equaled the demands of the Landscape and the Floricultural Departments. Then the mild winter, followed by a severely cold spring, was as trying to vegetation here as elsewhere. Despite these drawbacks, the island in general is far from arid-looking, and its appearance and condition should greatly encourage the designers of gardens about Chicago. Without any care whatever since the close of the Fair, the hardy shrubs and herbaceous perennials in the island's border have flourished, and early June found it gay with flowers. Lack of care has somewhat dwarfed the growth of *Saponaria ocynoides*, which did so much to brighten up the place at this time last year, but it has not lessened its crop of flowers; indeed, the check on its growth from lack of water seems to have made the mat of its pink flowers more compact than ever upon its short stems.

Delphiniums in light and dark blue have done well, and are beginning to bloom. Clumps of *Polemonium Richardsoni* have spread less, look less vigorous and show fewer spikes of beautifully blue blossoms than they did last year. They look thirsty, and have, I think, suffered more from heat than from cold. This variety of *Polemonium* is so handsome both in foliage and flower that it deserves a trial in every hardy border.

Groups of *Geum coccineum* have more than doubled in size and are crowded with pretty blossoms. This plant seems admirably suited to the trying conditions of the place. *Anemone Pennsylvanica* has held its own, while *Callirhoe* has scarcely done so.

Of the numerous *Columbines* noticed last year, only *Aquilegia Canadensis* makes much show now, but many of the other varieties have been removed to a hardy border that is being made in the Rose-garden. The most showy of all the plants now in flower are the Oriental Poppies, that have grown wonderfully and have this season shown sheets of vivid color, where last year only a few big blossoms were seen.

As the border of the island was intended to be representative of natural growths in similar situations in the north-west, the omission of certain native plants, notably the stately Giant Parsnip (*Heracleum giganteum*), is especially noticed by those who know that it grows abundantly and to immense size within two miles of Jackson Park.

Chicago, Ill.

Fanny Copley Seavey.

Recent Publications.

Alternating Generations. A Biological Study of Oak Galls and Gall-flies. By Hermann Adler, M.D., Schleswig. Translated and edited by Charles R. Straton, F.R.C.S., F.E.S. Oxford, at the Clarendon Press. New York, Macmillan & Co., pp. xl. and 198.

Under the above title we have an interesting and valuable work to which both author and translator have contributed a series of observations which greatly enlarges our knowledge. The subject of parthenogenesis among insects is a most attractive one and offers great fields for original work. Among the *Cynipidæ* it appears in a variety of forms, alternating with normal sexual reproduction in many instances; but frequently established as a constant feature in the life cycle of the species. In a rather long introduction the translator discusses the general subject and sketches, historically, the investigations made, the conclusions reached, and the theories upon which the phenomena have been explained. He describes the formation of the reproductive cells in both sexes, the modifications which they undergo, and cites cases of spermatogenesis to prove that potentially the male cells may be reproductive, while the possibility of continued agamic reproduction is theoretically demonstrated.

The author first cites the observations made on the alternation of generations among Oak gall-flies, explains the methods by which his observations were made, and then gives in detail the records of a long series of experimental breedings, proving conclusively that the species of certain genera are merely agamous forms of those of other genera, and, finally, that in certain other forms males never appear, the agamous females ovipositing freely and the eggs proving fertile in all cases. An interesting chapter is devoted to the formation of the galls, proving that the adult does nothing to influence it. "Hitherto it has constantly been stated that the prick of the gall-fly and the simultaneous introduction of a glandular secretion

excited a specific cell-growth which led to the formation of the gall. . . . This, I hold, only begins when the larva emerges from the egg." "The moment the larva has broken through the egg-covering and has, for the first time, wounded the surrounding cells with its delicate mandibles, a rapid cell-growth begins." This conclusion was substantiated by investigation, but it applies only to Cynipid Oak galls, since there are numerous exceptions in other instances. A detailed description of the ovipositor is given, the method of its use is observed, and the function of the peculiar egg-stalk in this family is made clear.

Finally, a chapter is devoted to an explanation of the reasons for this alternation of generations and how it originated; and the author concludes that, "In any case I consider it certain that parthenogenesis is the primitive mode, and that sexual reproduction is subordinate to it."

Altogether, the book is one that should be in the hands of every biological student for its scientific interest, and in the hands of every one interested in the growth and cultivation of Oaks, for its descriptions of the relation of the gall-structures occurring on it.

Notes.

It is announced that Mr. George W. Campbell, of Ohio, who is well known for his connection with the Delaware, Lady and other good varieties of Grapes, is about to introduce an early Black Grape known as Campbell's Early.

The annual export of tea from Formosa is stated by the *American Grocer* to reach almost 17,000,000 pounds, valued at nearly \$4,000,000. Formosa tea is said to be the best in the world, and it is stated that unscrupulous dealers in Japan, Corea, and especially in India and Ceylon, have been doing a large business in sending to the market their own goods put up in imitation of the Formosan article. The new law, compelling importers to brand each package with the name of the place it comes from, has given much satisfaction to tea merchants in China.

Galium Mollugo is the earliest to bloom of those plants with minute flowers, sprays of which are so useful for mingling with other cut flowers. *Galium aristatum*, which is still better because its clusters are more open, blooms somewhat later and has a delicate fragrance like that of Buckwheat blossoms. The *Gypsophilas*, notably *G. paniculata*, have small flowers on upright little stems no larger than a cambric needle, and are invaluable in the garden. *Statice latifolia* has very minute bluish flowers and stiff slender stems. All of these are perennial plants of the easiest culture, and sprays of them in bouquets have the effect of softening the colors of other flowers and surrounding them with a kind of mist or halo.

In a recent bulletin issued by the Mississippi Experiment Station, Professor H. E. Weed describes and illustrates an attachment to knapsack pumps by which kerosene can be mechanically mixed with water for use as an insecticide, and the mixture appears to do all the work of an emulsion, and thus simplifies the application of the oil. The attachment can be applied to all knapsack pumps of the Galloway pattern, and can now be purchased with the Perfected Galloway knapsack and the Perfection Sprayer. The attachment can be used for many purposes where a mechanical mixture of two liquids is desired, and, since it is not patented, all manufacturers are at liberty to place it upon their spraying outfits.

From the Journal of the Kew Guild for 1894 it appears that 1,733,386 persons visited the Royal Gardens during 1893; of these 676,894 entered them on Sundays, and 1,056,492 on week days, the greatest monthly attendance being in August, and the smallest in January. Within the Gardens 2,604 acres, or about 113,430 square feet, are enclosed under glass. The Gardens are intersected by nearly fifteen miles of walks, besides the one or two miles of walks inside the houses. The big Palm-house, which was built in 1848 at a cost of about \$150,000, has a length of 363 feet, with a height to the central dome of sixty-two feet. It is heated by six large wrought-iron tubular boilers and about three and three-quarters miles of piping.

Professor J. B. Smith, Entomologist of the New Jersey Agricultural Experiment Station, seems to have shown that if a Pear-orchard infested with the pear midge is cultivated as usual, or if the orchard is in grass and the sod plowed under after June 15th, a top-dressing of kainit, applied at the rate of

one thousand pounds an acre, will kill the insects and benefit the trees. On limited areas kerosene emulsion, diluted ten times, may be used instead of kainit. This, of course, is good treatment for the orchard as well, and it will hold in check this most injurious pest of the Pear which has been introduced into the United States within recent years. Lawrence Pear-trees are most seriously affected, and it is sometimes possible by destroying the entire fruit-set of a few Lawrence trees to protect the remainder of the orchard.

Mr. E. P. Powell writes that he finds a row of Tartarian Honeysuckles particularly useful as a screen about small fruit-yards against the frosty winds which often set in just after the fruit-blossoms are well set. He does not allow the plants to grow up to tree form, but cuts them back occasionally, and if by any accident a bush is broken down, it will be in good shape again within a year. He sets the white, pink and deep red flowering sorts in succession, so that the hedge in May is a mass of blossoms, delicate in form, color and fragrance. He also finds our native *Lonicera cærulea* valuable for this purpose, for, although the flowers are less conspicuous, they come earlier than those of *L. Tartarica*, and are exceedingly fragrant. The berries of different shapes are not only ornamental, but are much relished by the birds, and robins will leave raspberries for the fruit of these Honeysuckles.

At the annual Rose and Strawberry show of the Massachusetts Horticultural Society, in Boston, last week, the strawberries were unusually good. This is particularly true of the Marshall, a new variety with large, dark and well-shaped berries. Owing to the excessive cold in March, which followed a season of warm weather, and the drought and exhaustive heat of the week before the exhibition the roses suffered in quality, although great numbers were displayed. The largest contributor was the Honorable Joseph S. Fay, of Woods Holl, and the four varieties which took the first prize for new kinds were Mrs. Harkness, Violet Queen, Spencer and Duke of Fife. There was a good show of annual and perennial herbaceous plants as well as interesting collections of wild flowers, one of them including forty-six species and varieties. From a cultural point of view, perhaps, the best plant in the exhibition was one of *Erica Boswelliana*, shown by C. M. Atkinson, gardener to John L. Gardner, Esq. The principal prizes for roses were taken by Joseph S. Fay, Dr. C. G. Weld, Sumner Coolidge and Mrs. J. W. Clark. The principal awards for strawberries were made to Warren Hustis & Son, George F. Wheeler, W. C. Strong, William Doran & Sons, George V. Fletcher and William G. Prescott.

More than 200,000 packages of vegetables reached this city from the south alone during last week. This large supply of perishable stock was handled with considerable waste, on account of the excessively hot weather, and many cherries and berries remained unsold. Small fruits from near-by states now in the markets include cherries from New Jersey, Staten Island and the Hudson River district. The last strawberries of the New Jersey crop are being handled, and the best berries now here are from New York state. This fruit throughout the season has been of large size and excellent quality, and the abundant supply has made it cheap enough for all buyers. Black raspberries from Maryland have been selling as low as two cents a quart at wholesale; red raspberries command from five to eight cents for a pint cup, in large quantities. Blackberries are coming from North Carolina and northward, and huckleberries from Delaware. Offerings of choice ripe currants are in limited quantity, and green gooseberries sell slowly. The Niagara and Champion grapes, from Florida, are already in market, and some Le Conte pears, small and not really ripened, from the same state. The watermelons received from Georgia are smaller than those which came from Florida early in the season; the best command seventy-five cents to a dollar each. Muskmelons from Charleston are plentiful and fair in quality, and sell for ten to twenty-five cents each. The last Bidwell and Peen-to peaches have left Florida, and as part of the forty-one car-loads of California fruit sold here during the week, were Alexander, Briggs' May, Garland and Hale's Early peaches in considerable quantity. Apricots from California are still small and of poor flavor. Clyman, St. Catherine and Cherry plums and Tragedy prunes are here from California, with a few boxes of Madeline pears. Montgamet cherries from California command the highest prices obtained for this fruit, Royal Ann and Black Tartarian following in price. These cherries are all affected by heavy rains on the Pacific slope, and they are much less showy and durable than in former seasons. Prices for California fruit in eastern markets have thus far not been encouraging to the growers.

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Art and Nature.

WE spoke last week of the way in which Nature's suggestions are often disregarded in the treatment of our private pleasure-grounds, when a respect for these suggestions would furnish an endless diversity of beautiful effects instead of the monotonous repetition of lawns, flower-beds and popular plants, all arranged after one fashion and without any relation to the original features of any given site. One reason for this unfortunate state of things may be found in the fact that most people seem to feel that there is an eternal opposition between the terms Nature and Art, and between the qualities they typify as appealing to our admiration and love. Of course, these terms are, in a sense, properly used in contrast. The highest work of art lacks certain qualities which delight the eye and kindle the imagination in a work of Nature; and, on the other hand, the most impressive natural object lacks that expression of human emotion and intelligence, that evidence of difficulties overcome and ideals conceived and achieved, which contribute so powerfully to the interest and charm of a successful work of art. The artist cannot really imitate Nature any more than Nature can copy Art; and until this fact is recognized we cannot appreciate the peculiar charm of either natural or artistic beauty. But Nature and Art are constantly conceived of as hostile to each other in a more radical way than this. Many people say, "We are lovers of Nature, and, therefore, we find those things most beautiful which the hand of man has not touched, or in which the traces of his hand are least obtrusive." These people think that a painter should copy as closely as possible some bit of nature, changing nothing, omitting nothing, emphasizing nothing, but trying to be as accurately photographic as possible, and they resent as an impertinence to themselves and an insult to Nature any suggestion of the artist that he saw more in the scene before him than they might, or saw it differently, or that he wished to press upon their attention some features more strongly than others. They wish him to be a literal translator, while the true artist is an interpreter who transmutes and perhaps glorifies a scene by infusing into it some of the poetry which inspires him. These same lovers of

nature insist on a slavishly accurate reproduction of nature by the landscape-gardener and deny his right to use the transforming power of his imagination in constructing his scenery.

On the other hand, many people say, "We are lovers of Art, and, therefore, the less an artist shows dependence upon Nature, the better he pleases us"; or, if they do not deliberately say this, they unconsciously act upon it. They are willing that a painter shall dispense with good drawing, natural schemes of color, and logical schemes of light and shade, if by some striking result he can convince them that he has "originality"; and they call his products "artistic" just in proportion as they diverge most palpably from the models offered by the natural world. Canons of taste like this in the domain of gardening have controlled the design of our country places more frequently than those of the opposite extreme, for we have reached a stage of mental development when we all wish to be considered artistic; and too many of us like the bold display of expenditure for its own sake, and "artistic" pleasure-grounds give a better chance for this display than pleasure-grounds adapted more closely to the suggestion of Nature.

This belief, that to be artistic we must show little regard for Nature, is seen in our excessive love for trees, shrubs and flowers which are novel or particularly showy or eccentric in shape or color, and also in the invention of novel forms and color combinations for the almost invariably ugly clipped flower-bed. This radical mistake of thinking that what is artistic must be unnatural, or, at least, non-natural, has not yet led the American people to an over-weening love for absolutely formal gardening; for the traditions of our English ancestry are strong, and we think we have a true preference for landscape-gardening. Our belief that we cannot be artistic without being unnatural is not self-confessed, as it was in France in the time of Louis Quatorze. Like many other beliefs in respect to art, it is a sort of groping desire for we know not exactly what. It would probably declare itself to be a desire to blend the beauties of Nature and of Art, which is precisely what it ought to be; but when analyzed by its results it shows very clearly as a desire to be "artistic" in defiance of Nature. And it has become as conventional in its manifestations as it is unintelligent in the crude feeling upon which these are based.

Not even the formal gardens of the seventeenth century were more alike in essence and in treatment than are most of our American pleasure-grounds. This one fact alone should show their owners that they are on a wrong track; for the key-note of landscape-gardening, if the term means anything at all, must be perpetual variety between one work and another. No two natural landscapes are alike, and within a very few miles we always find many which are surprisingly unlike in radical character and general effect as well as in details. Therefore, an art which is based upon the study of Nature cannot be going right when its products all bear a close family likeness to each other, and this not only as regards a single stretch of country-side, but as regards regions that lie far apart and are wholly different in climate, geological conformation and native vegetation. Expedients which are right for one place on the island of Mount Desert would most likely not be quite right for a neighboring place; and certainly they would not be right for one on the banks of the Hudson, in the mountains of North Carolina, on a stretch of western prairie or the coasts of the Pacific Ocean. Yet far and wide we find the same ideals, the same expedients; and the greater the natural beauty of the site the more apt are these ideals and expedients to be wrong. For the essence of all natural beauty is distinctness of character; and the more individual this character is, the more charming we are apt to find it, while the more certainly it is ruined by the unintelligent application of conventional and stereotyped methods of "improvement."

The true scheme for an artist in any branch is to follow out Nature's ideals and suggestions, showing his own indi-

viduality and his own creative imagination by intensifying the character she presents—ennobling, purifying, glorifying her suggestions. The artist on canvas may choose what he wishes to do at any given time and place, provided that, once his theme is selected, he keeps it clearly in mind and transgresses no essential truth in explaining it. But the artist in landscape must consent, at any given place, to do what Nature then and there prescribes, or, at least, permits. To try to wipe out her work is futile; to try to conceal its character and supply a new one can result merely in an abortion which is admirable neither to the genuine lover of Nature nor the genuine lover of Art. This is true even when we think of a real artist at work; and if we think how much more true it must be when ignorant owners, assisted by men who may grow plants well, but have no knowledge whatever of art, strive to do artists' work, then we can comprehend why so few American country places, large or small, give any pleasure to intelligent observers. When we really understand in what points Art stands in contrast to Nature, and in how far it must rest upon Nature and get its inspiration from her, then we shall realize that lawns and flower-beds are appropriate, and therefore artistic, in some situations, absolutely formal gardens in others, and almost absolute wildness in others; and that between these types, as within each of them, an infinite number of beautiful gardening schemes may be evolved—infinite because the beauty of Nature varies perpetually—and if we search over the whole surface of our wide and fruitful land we can find no scene which is not distinct from every other in its essence, its character and its expression.

Flowering and Fertilization of the Native Plum.

THE uncertainty of fruitage in our native Plums is well known by all who have attempted their cultivation. A full bloom of most other fruits is usually followed by at least a fair setting of fruit, but with the native Plums—I use the plural number because there are several species—bloom on the average tree is no certain indication that any fruit will form. It is not my purpose to note the many contingencies that lie between a crop of well-fertilized ovaries on the Plum-tree and the delicious mature fruit that attracts the eye and tempts the palate, but rather to confine myself to contingencies that lie between the opening of the petals and the fertilization of the ovary. In this work I shall consider some of the reasons for the frequent failures in fertilization that have been suggested by others, supplemented, so far as possible, by personal observation upon our own Plum-trees.

First, I may mention that in the varieties of Plum of which I have examined the flowers, thirty-four in number, those belonging to our native species have decidedly more slender styles and smaller stigmas than those of the European Plum, *Prunus domestica*, and I have observed this season that the slender styles of our native varieties were more often broken or bent by driving rain than those of the *Domestica* varieties. I should add, however, that I have examined but few of the varieties of *P. domestica* in this particular. I infer that a severe rain-storm, during full bloom, would work much greater harm to our native than to the European varieties.

A lack of pollen has sometimes been ascribed as a reason for infertility in our native Plums. I cannot say that this never occurs, but all of the varieties growing at the Wisconsin Experiment Station that bloomed this season appeared to produce abundant pollen. When we consider that all of the anthers in the same flower rarely mature at the same time, and that the flowers on a given tree usually have a range of some days in their time of opening, it hardly seems probable that, where abundant pollen is produced, a total failure in pollination could result, even in unfavorable weather. I suspect that a rain-storm occurring when the trees are in full bloom, if not sufficiently severe to destroy the styles, would promote self-pollination, for, as I have observed, rain tends to dislocate the stamens, and often brings the anthers directly in contact with the stigma.

Imperfect pistils, or an absence of pistils, has also been offered as a reason for infertility in native Plums. Unquestionably this defect sometimes occurs. Professor Bailey mentions* a wild Plum-tree of his acquaintance that bears flowers

without pistils, also that, in the season of 1892, only about one flower in twelve of the Newman Plum at Cornell University had a perfect pistil. I have made careful observations on this point in our own Plum-trees during the present season and find a marked difference in varieties as to the percentage of perfect pistils. I have tabulated the results of my observations as follows:

VARIETY.	Number of flowers examined.	Number of perfect pistils.	Number of flowers without pistils.	Number of abortive pistils.	Number of pistils that had been destroyed.	Per cent. of perfect pistils.
De Soto	116	107	1	3	5	92.
Forest Garden.	109	106	0	0	3	97.
Forest Rose.....	113	108	0	2	3	95.
Homestead.....	59	49	9	1	5	81.
Le Duc.....	116	87	5	12	12	75.
Maquoketa.....	134	127	2	1	4	95.
Mariana.....	247	154	62	20	11	62.
Miner.....	105	101	1	0	3	96.
Moore's Arctic.....	127	121	3	1	2	95.
Moreman.....	104	30	73	1	0	29.
Ocheda.....	113	104	3	4	2	92.
Pottawattamie.....	104	100	0	3	1	96.
Quaker.....	106	100	2	3	1	94.
Robinson.....	104	65	37	1	1	62.5
Seedling from German Prune.....	101	84	1	8	8	83.
Seedling No. 3, Gale.....	105	87	8	9	1	83.
Seedling from Sparta.....	106	72	4	18	12	68.
Smith's Red.....	122	112	3	3	4	92.
White Nicholas.....	100	100	0	0	0	100.
Wild Goose.....	123	76	35	...	12	62.
Wolf.....	108	98	10	0	0	91.
Wyant.....	115	97	15	3	0	84.

I endeavored to ascertain if the proportion of the flowers that formed fruits in the different varieties corresponds with the percentage of perfect flowers. At first I concluded that there was such a correspondence. The number of embryo fruits that appeared after the falling of the petals was unquestionably greater, as compared with the number of blossoms, on the trees that had a high percentage of perfect flowers than on those in which the percentage of perfect flowers was low. But a new factor entered here that I do not understand. After the miniature plums had attained the size of an apple-seed, or a little larger, a large proportion of them dropped from some of the trees that had shown a high percentage of perfect flowers. This shows that another influence affected the fertilization besides the question of perfect pistils. We had a cold period about this time, and it is possible, as Mr. R. P. Speer has suggested,† that the low temperature prevented the formation of the pollen tube. I observed, also, that the after failure of the fruits was sometimes most marked in varieties that apparently possessed the most robust pistils. The White Nicholas a Russian variety of the *Prunus domestica* species, was the only variety I examined that showed 100 per cent. of perfect pistils, and I noted that the styles and stigmas of this variety were especially large, yet the number of fruits on this tree at this time is very small, and the trouble is not from the curculio. The miniature fruits turned yellow and dropped when about the size of an apple-seed.

It is of interest that of the varieties that I have examined, the four showing the smallest percentage of perfect flowers, Moreman, Wild Goose, Robinson and Mariana, are all of some other species than *Prunus Americana*; also, that the varieties of the European Plum that I have examined have all shown a high percentage of perfect flowers. We have several varieties of the latter species that failed to bloom this year, possibly because their flower-buds were destroyed by cold.

From the testimony of others, I conclude that the percentage of imperfect flowers in a given variety often varies in different seasons. Professor Bailey, in the bulletin above cited, says, "Imperfect flowers are occasionally observed, but they are apparently peculiarities of individual trees or particular seasons." The observations of Mr. O. M. Lord, of Minnesota City, Minnesota, are especially valuable on this point. Mr. Lord wrote me, under date of May 24th, 1894, "I began to study Plum-blossoms a few years ago to see if I could get any light on the non-bearing habits of some varieties, and also to see if

* Bulletin No. 38, Cornell University Experiment Station.

† Bulletin No. 4, Iowa Agricultural Experiment Station.

sufficient data could be gathered to show that any varieties are practically diœcious. . . . I have found some groups entirely without pistils for a series of years, and last year I was surprised to find no pistils on my Gaylord trees that had never refused to bear before. They are loaded again this year." In the last Report of the Minnesota Horticultural Society, Mr. Lord observes further, "Nearly all native Plums produce an abundance of pollen, but some varieties are more or less deficient in stigmas every year, and in some years are entirely deficient. This habit is, I believe, peculiar to some varieties, not only when indigenous or growing wild, but when transferred to other localities, the habit is intensified, so as to produce imperfect stigmas, or, perhaps, none at all. . . . I have a group of trees that blossom profusely every year that never has produced any fruit, growing within a few rods of another group that has borne nearly every year for forty years. The blossoms of the first-named group bear no stigmas, many of the blossoms not even having the rudiments of one. But I was greatly surprised this year to find no stigmas in the blossoms of some kinds that have borne fruit for several years in succession until this year, from which I conclude that there is a wide field in this direction for experiment and investigation."

Certain varieties, as the Wild Goose and Mariana Plum, that are productive further south, are rarely fertile in Wisconsin, and these showed a low percentage of perfect flowers in our Plum orchard. This suggests that the failure of pistils may be due, at least in some varieties, to severity of climate. I think it possible that poverty of the soil and overbearing may in some cases cause sterility in Plum-blossoms. Mr. Waite, in his investigation of the fertilization of Pear-flowers, came to the conclusion that this is true in the Pear. It is also possible that partial destruction of the foliage by insects or fungi during the growing season may sometimes cause sterility of the flowers, for while a checking of growth in a moderate degree doubtless tends to the production of flower-buds, an excessive check might so impoverish the tree that there would not be sufficient stored food to develop fruit.

In conclusion, I wish to call attention to the advantages that are likely to result from hybrids between the hardier varieties of the European Plum and the more prolific varieties of *Prunus Americana*. If we can combine the robust pistils of the former species with the cold-enduring qualities of the latter, we may hope for annual crops. Of the European varieties in our own Plum orchard Moore's Arctic appears to be the hardiest, and of the *Americana* sorts, Forest Garden is now carrying the largest crop.

Madison, Wis.

E. S. Goff.

Flora of Central Thibet.

THE following account of this interesting flora is taken from a late number of the *Kew Bulletin*:

Previous to Colonel Przewalsky's explorations little was known of the flora of the vast country lying immediately north of the Himalayas, generally known as Thibet; and only portions of his discoveries have been published. Sir Joseph Hooker penetrated the fringe of this country on the Sikkim frontier; Dr. T. Thomson, Lieutenant-General Strachey and Mr. J. E. Winterbottom botanized the extreme west. That was upward of forty years ago. Since then various other travelers have entered the country for short distances at various points, and the rich flora of the extreme east has been made known through the extensive collections sent to Europe by Father David, Mr. Pratt, Prince Henry of Orleans and others.

Captain Bower's journey across Thibet from west to east, in latitudes between thirty-four and thirty degrees, and Mr. Woodville Rockhill's journeys from north to south, in about the longitude of Lhasa, are so well known that it is only necessary to mention them in connection with the plants connected. Surgeon-Captain W. G. Thorold accompanied Captain Bower and made a collection of all the plants found growing at elevations between 15,000 and 19,000 feet. Mr. Rockhill also collected, and his plants, as well as Mr. Thorold's, were presented to Kew, as announced in the *Kew Bulletin* (1893, p. 369).

These collections, together with a smaller one made by Captain H. P. Picot, of the Indian Staff Corps, in the Kuen-lun plains, form the subject of a paper read by Mr. W. Botting Hemsley, before the Linnæan Society, and published in the Society's *Journal* (vol. xxx., pp. 101-140). The number of novelties is not great, but about thirty per cent. only extend to the Himalayas. The chief interest of the collection, however, is in the nature and general distribution of the plants forming this exceedingly meagre vegetation, the remains, probably, of a former much richer flora. Judging from the fact that many of the species are found in the most widely separated parts of

the country, even those that are not known to occur outside of Thibet, there must be very few local species. A large majority of the plants scarcely lift themselves above the surface of the soil, the characteristic type being a rosette of small leaves closely appressed to the ground with a central sessile inflorescence. With regard to altitude, fifty-seven, or just half, of Thorold's plants were collected between 17,000 and 18,000 feet, five between 18,000 and 19,000, and one, *Saussurea tridactyla*, at 19,000 feet.

Foreign Correspondence.

London Letter.

ORCHIDS were the principal feature among the exhibits at the last meeting of the Royal Horticultural Society, and a lecture by Mr. G. Nicholson, Curator, Royal Gardens, Kew, on hardy flowering trees and shrubs served to attract a large attendance. Mr. Nicholson is the acknowledged authority on all matters concerning cultivated trees and shrubs, his long experience at Kew having afforded him exceptional opportunities, which he has made the most of. His lecture was limited to a consideration of the rarer trees and shrubs which deserve to become popular in gardens, and which may be seen in the Kew collection. We have had three lectures this year on much the same subject, those by Mr. J. Veitch on the trees and shrubs of Japan, and by Monsieur Vilmorin on the Harvard Arboretum, being of the same tenor as Mr. Nicholson's. The Society has urged exhibitors to send to the meetings this year examples of all interesting and rare hardy trees and shrubs, and as these have flowered exceptionally well, some good shows have been the result. Kew has been to the fore in sending specimens of the rarer hardy plants, while nurserymen who are interested have contributed collections comprising numerous rare and promising things. The meetings of the Society are now very popular, being attended by many who are professionally interested, as well as by most of the wealthy amateurs of the art of horticulture within easy reach of London. No better means could be devised for the development of horticulture than these periodical meetings, with the exhibitions of all that is new and interesting among cultivated plants and lectures by representative men.

NEW ORCHIDS.—No less than six first-class certificates, ten botanical certificates and twelve awards of merit were given by the Orchid Committee to plants shown last Tuesday, evidence, if that were needed, of the extraordinary amount of attention these plants continue to receive in England. The most noteworthy of those certificated were three hybrid *Masdevallias*, shown by Messrs. J. Veitch & Sons: *M. Asmodei*, a hybrid between *M. Reichenbachii* and *M. Chelsoni*, and pretty enough in the color and form of its flowers to find general favor; *M. glaphyrantha*, a hybrid between *M. Barloeana* and *M. infracta*, with purplish flowers, too dull, I am afraid, to please many tastes; *M. Parlatoreana*, a hybrid between *M. Veitchii* and *M. Barloeana*, was raised by Messrs. Veitch and distributed by them several years ago, but it had not before received a certificate. Hybrid *Masdevallias* are now fairly numerous, they are all interesting, especially to the botanist, but I question if any of them is an improvement in a horticultural sense on its parents.

DENDROBIUM GUIBERTII.—Messrs. F. Sander & Co. showed this form of *D. Griffithianum*. It has large golden-yellow flowers, suggesting a small-bulbed form of *D. densiflorum*.

AERIDES MACULOSUM SCHROEDERI.—This was shown by Sir Trevor Lawrence, and, although not new, was considered rare and distinct enough to deserve a first-class certificate. It bore a four-branched spike of large lilac-rose and purple flowers.

CATTLEYA MOSSIE ALBA.—A very superior form of this *Cattleya* was shown by Mr. H. T. Pitt, which would be *C. Wagneri* were it not for a tinge of purple on the front lobe of the labellum.

ODONTOGLOSSUM CRISPUM.—We have already scores of

named varieties of this Orchid, and they continue to come, no less than four new ones being certificated last Tuesday. The names of some of them, however, call for comment. Surely it is possible to give complimentary names without adding a string of Christian names like the following: *Odontoglossum crispum*, var. Miss Florence May Bovill, and *O. crispum*, var. Mademoiselle Cécile de Rochfort. If this kind of thing goes on, garden nomenclature will become ridiculous. I am heathen enough to not care to hear the whole string of names that some lady's godparents gave her rattled off when I want to know the distinctive name of an Orchid. Complimentary names are becoming a nuisance. Another newly certificated plant was named *Odontoglossum luteo-purpureum sceptrum leopardinum*!

CYPRIPEDIUM SARGENTIANUM, which was introduced last year by Messrs. F. Sander & Co., was shown in flower last Tuesday. It is one of the *Selenipediums* and comes very near *S. Lindleyanum*. It has long strap-shaped, bright green leaves and tall scapes bearing greenish-yellow flowers with red-brown lines and blotches.

HOULETTIA LANSBERGII.—This was shown with an erect scape of creamy yellow flowers, by Messrs. H. Low & Co., who also sent a collection of varieties of *Cypripedium bellatulum* showing considerable range of color-tints.

PHAJUS OWENIANUS.—This beautiful hybrid, raised by Messrs. F. Sander & Co., was shown by them. I noted and briefly described this plant in my letter on the Temple Show, a few weeks ago. Last Tuesday it won the premier award for the best new hybrid Orchid of 1894. The same firm sent fine examples of the now rare but exceedingly beautiful *Zygopetalum Klabochorum* and *Z. Piscatorei*, plants which would find a great deal more favor if they were less difficult to cultivate.

Certificates were awarded to the following, and, although none is new, they are all first-rate plants which deserve to be better known:

ARISEMA FIMBRIATA, one of the prettiest of the Malayan species. It has a large hooded spathe, white, with purple lines, and a long drooping spadix, remarkable in being clothed with long, fleshy, bristle-like hairs. The leaves are trifoliate and rich green. This species requires tropical treatment, thriving well with *Caladiums*, whereas *A. speciosum* and the Himalayan species generally do best in a greenhouse. *A. præcox*, the Japanese species, is nearly hardy here. It is a useful plant for a bed in a cool conservatory.

PTERIS LUDENS.—This is one of the most striking of that group of the genus represented by *P. sagittata*. It has broad deep green fronds a foot across at the base, and is one of the best Ferns introduced by Mr. Bull. It has been in cultivation many years, but has only now received a certificate.

OSMUNDA JAVANICA is a handsome greenhouse Fern with erect, bipinnate, rich green fronds, which has been in cultivation at Kew for the last twenty years, and is used to mix with flowering plants in the conservatory.

LYGODIUM DICHOTOMUM POLYDACTYLON is a pretty variety of one of the best of the *Lygodiums* which are grown up pillars, etc., in tropical stoves. It differs from the type in having the pinnae elegantly cut into several divisions. It worthily received a first-class certificate.

SARRACENIA WILLISII is a hybrid between *S. melanorrhoda* and *S. Courtii*, both of which are of hybrid origin. It is a handsome free-growing plant with pitchers about a foot long, at first green, ripening to rich reddish brown.

FAGUS ROTUNDIFOLIA is a pyramidal Beech, probably only a form of *F. sylvatica*, with very small, round, bright green leaves. It was shown by Mr. Jackman, of Woking, and obtained a first-class certificate.

WIDDRINGTONIA WHYTEI.—This is a new Conifer which has lately been introduced from Nyassaland to Kew by means of seeds brought home by Mr. Whyte, who collected specimens of animals and plants in that region in 1891 for the British Museum. The seedlings are now six inches high, and from their behavior they are likely to do

well under cultivation. The genus is closely related to *Callitris*, also African, and of which several species are in cultivation. *W. Whytei* is, according to Mr. Whyte, a large tree, specimens measured by him being 140 feet long, with a clear straight stem ninety feet long and nearly six feet in diameter at the base. The cones are smaller than a chest-nut, and of the same shape—longer than broad. The foliage is Juniper-like, and the wood is dull reddish white. There were forests of this *Widdringtonia* at high elevations on Mount Milanji, an account of whose plants is published in vol. iv. of the *Transactions of the Linnean Society*.

OMAR KHAYYÂM'S ROSE.—A Rose now in flower at Kew, and which was raised from seeds sown ten years ago, has excited considerable interest on account of its doubtful identity with any Rose in cultivation, and also from the fact that it was the child of a tree found growing on the grave of Omar Khayyâm, the Persian poet, who lived in the eleventh century, and who, when he died, "desired that his grave might be where the wind would scatter rose-leaves over it." Mr. Baker now identifies the Rose as a form of *R. centifolia*, the sweetest of all Roses, and the parent of our Moss and Cabbage Roses. The seeds were brought to England by Mr. William Simpson, who gathered them while on a sketching tour in Persia on behalf of the *Illustrated London News*. How long the original bush has been on the poet's grave is not known, but its flowers are double and rose-pink in color.

London.

W. Watson.

Plant Notes.

Passiflora manicata.

TO a person from the eastern states visiting for the first time the gardens of Santa Barbara, California, no other plant appears more striking and remarkable than the red-flowered Passion-vine, which may be often seen climbing into the tops of the tallest Eucalypti—that is, to the height of fully a hundred feet—or draping arbors and out-buildings with masses of its dark green foliage thickly studded in the spring with the deep scarlet flowers.

This magnificent plant is the *Passiflora manicata* of botanists, and a native of Peru, where it was discovered by Humboldt nearly a century ago, and of the Andes of Ecuador and New Granada. More than fifty years ago it was introduced into the gardens of Europe by the German collector Hartweg, who found it growing in hedges in the neighborhood of the city of Loxa.

Difficult to manage and shy of displaying its beautiful flowers in northern greenhouses, *Passiflora manicata* long ago made itself at home in the gardens of the Riviera, as it has in those of Santa Barbara, where it grows with astonishing vigor and rapidity, although individual plants are inclined to be short-lived—a matter of comparatively little importance, perhaps, as seeds are produced in profusion and young plants grow so fast that at the end of two or three years they have usually outgrown their quarters.

Passiflora manicata produces nearly terete branches clothed, like the petioles, the under surface of the leaves, the stipules, bracts and exterior of the perianth, with soft pale pubescence. The leaves are thick and firm, three-lobed to about the middle, finely serrate, dark green on the upper and pale on the lower surface, and are borne on stout petioles an inch in length, and marked with three or four dark glands; the stipules are an inch in diameter, ovate, deeply toothed, concave and clasping. The rigid peduncles are about two inches long, raising the flowers well above the foliage. The bracts at the base of the flower are ovate, acute, serrate, membranaceous and free or united from the base upward to the middle. The tube of the flower is about half an inch long, and inflated and ten-lobed at the base; the limb is three to four inches in diameter, bright scarlet, with a double crown, the outer at the mouth of the tube composed of numerous rows of dark blue hairs, the inner at the top of the inflated base of the

perianth. The fruit is egg-shaped, about an inch and a half long, deep yellow-green, and hangs on a slender stipe; it is covered with a thick skin and contains numerous large seeds surrounded by thin watery pulp.

A flowering branch and a fruit of *Passiflora manicata* is reproduced from a drawing made by Mr. Faxon in our

publishing a portrait of a young plant of the California Fan Palm, *Washingtonia filifera* (see vol. vi., page 535).

The manner in which *Passiflora manicata* reached California appears to be unknown, but whoever it was who first had the happy inspiration of planting it there certainly deserves well of the state.



Fig. 44.—*Passiflora manicata*.—See page 264.

illustration on this page. The habit of the plant as it grows in California is displayed in the illustration on page 267, which represents a young specimen covering an observatory in the garden of Mr. Hugh D. Vail, one of the pioneers of Santa Barbara horticulture, whose garden has already furnished us with an opportunity of

ROSA GIGANTEA.—None of the plants of this species which we have seen in the United States have yet borne flowers, but Mr. E. D. Sturtevant writes that a plant flowered in his garden near Los Angeles, California, in March and April. The plant was received from Kew three years ago, and has made several shoots twenty feet long. The flowers, which

were borne sparingly on one-year-old growths, were from three to three and a half inches in diameter and were of a milky color, not so purely white as those of the Cherokee Rose. The size of the flowers was something of a disappointment, as they had been described as attaining a diameter of six inches in their native country. This particular plant, however, has been allowed to produce many shoots from the base instead of being trained to a single stem, and Mr. Sturtevant thinks that when this is done and the plant has grown older its flowering will be more satisfactory. It is growing in a soil of stiff clay, and has had little care or cultivation.

INDIGOFERA DECORA.—This is a half-shrubby little plant, which is now bearing spikes of snow-white flowers three or four inches long in the season when such flowers are most welcome. It is a most desirable plant for the rockery in midsummer, as it is dwarf and low, the foliage a clear light green, and it keeps flowering for at least a month. It would also be an admirable plant for the front of a shrub-border or any other position where a low compact growth is wanted.

LIGUSTRUM IBOTA.—This Privet, from north China and Japan, which was figured in this journal (vol. vi., page 425), is certainly one of the best exotic shrubs which have been introduced into our gardens for many years. It is beautiful as a single specimen; beautiful when massed on a hill-side, as it is in the Arnold Arboretum; beautiful in a mixed shrubbery, and, in short, it is almost invaluable in ornamental gardening. Its long, arching branches give it a character altogether distinct from other Privets. The pure white flowers are borne on pendulous clusters and have a long and slender corolla-tube, and at this season appear in great profusion. The foliage is good, and turns to a dark rich color in autumn, while the dark purple fruit, with a bluish bloom, gives the plant additional interest. It will probably attain a height of eight to ten feet in this country, and it does not seem to get scraggly with age, for, although it flowers when it is very young, it flowers still more abundantly as it becomes more mature. Large sprays of it in flower are very graceful when used for decorative purposes. It is not only perfectly hardy here, but seems to take so kindly to our climate that it will probably become naturalized as the common Barberry has in New England.

A DOUBLE CEANOTHUS.—Our common *Ceanothus Americanus*, or New Jersey Tea, has begun to flower in this latitude, and its light airy flowers at the end of its leafy shoots make it an attractive plant, although it is one of the commonest of those found along the road-side thickets. A double-flowered variety, which was received from Mr. Lemoine under the name of *C. hybridus flore pleno*, is now blooming in the Arnold Arboretum. It seems to be perfectly hardy, and has the good foliage of our New Jersey Tea, and will probably endure drought as well as our native plant. But, in addition to this, it is much more floriferous and bears larger heads of flowers, which are slightly tinged with pink, and, altogether, seems to be an interesting addition to the low shrubs which bloom at this season.

RHODODENDRON ARBORESCENS.—This beautiful southern Azalea, which was figured for the first time in *GARDEN AND FOREST*, vol. i., page 401, has been planted to some extent during a few years past, but it is still not yet nearly as well known as its merits deserve. It is by no means a new plant, as it was introduced into English gardens more than three-quarters of a century ago, but it was probably lost soon after, and for years it was hardly known in gardens until it was distributed among many shrub collections in this country and abroad through the agency of the Arnold Arboretum. The white or pink-tinged flowers are set off by bright scarlet stamens and pistils, and are deliciously fragrant. It is the latest of the Azaleas to bloom, and although it is not found in a wild state north of Pennsylvania it is perfectly hardy as far north as New England. The plant needs no special treatment and flowers every year.

Cultural Department.

Notes on Trees and Shrubs.

THE species of *Philadelphus*, or Mock Orange, as generally found in gardens, seem to have hybridized to such an extent that it is not always easy, and, indeed, is often impossible, to specifically classify them. While there are not half a dozen well-defined species which have been introduced into gardens and cultivated, the varieties or forms offered by nurserymen are commonly very puzzling, and too often plants with different names from various sources turn out to be practically the same.

The species most generally seen in cultivation is probably the common Mock Orange, *Philadelphus coronarius*, a native of parts of south Europe and of Asia, including Japan. Over this wide range several botanical varieties have been created, but they do not vary greatly from the type, or as much as the horticultural hybrids. The other species in cultivation are all natives of North America. *P. inodorus*, *P. grandiflorus* and *P. hirsutus* are natives of our southern states; *P. Lewisii* and *P. Gordonianus* are indigenous in the Rocky Mountain region, while the curious small-leaved and small-flowered *P. microphyllus* comes to us from the region of New Mexico, Arizona and Colorado.

Where two or more of these species are grown together and blossom at about the same time there is reason to believe that natural hybridization frequently takes place, and intentional hybridization has been sometimes practiced. The species of *Philadelphus* generally yield seeds in abundance, and these freely germinate under favorable conditions, so that seedling plants of *Philadelphus* often become a trouble and must be treated as weeds. They will usually flower in three or four years after the germination of the seeds.

The flowers of *P. coronarius* are smaller than those of some of our native species, but they are earlier. Plants grown from seed from the Botanic Garden at St. Petersburg, Russia, received under the name of *P. coronarius Schrenkii*, prove about the earliest blossoming of all, although one or two others are almost equally early. They generally begin to open about the first week in June. Like all the flowers of this species, they are strongly fragrant. They expand an inch or a little more in diameter, and are light straw-colored rather than pure white. A plant which came as seed from the Jardin des Plantes, at Paris, under the name of *P. coronarius ledifolius*, is not to be distinguished from it.

Much more beautiful, though apparently belonging to the same species, is a plant labeled *P. speciosus*, from the Rochester nurseries of Ellwanger & Barry. The first flowers open only two or three days later than the earliest sort; they are fragrant and about an inch and three-quarters in diameter, with broad, nearly pure white petals. Except that they are several days later in flowering, plants received from the Parsons nurseries, at Flushing, Long Island, under the names of *P. gracilis* and *P. magnificus*, seem essentially the same as the *P. speciosus* from Rochester, so that in the collection they may be regarded as simply duplicates.

A plant of *P. speciosus* from the Flushing nurseries differs in flowering a little later, in having large, handsome, pure white flowers, which expand two inches in diameter and which have little or no odor. With the exception of the last-named, all the plants mentioned apparently belong to the *P. coronarius* group, and they are all characterized by a slender-branched, broad-spreading form, rather than the stouter-branched, stiffer, more erect and taller habit of one or more other groups in common cultivation.

Philadelphus grandiflorus, received as such and grown from seed collected in Ohio, has become fully twice as tall as *P. coronarius*, and it not infrequently reaches a height of twenty or more feet. Its stiff erect stems are not so well covered with foliage on the lower portion as are the more drooping branches of *P. coronarius*. In its blossoming, *P. grandiflorus* is quite as desirable as *P. coronarius*, its almost snow-white flowers being produced in great abundance regularly every season. The blossoms average about an inch and a half in diameter, have large rounded petals and are odorless. The calyx-lobes and under sides of the leaves are usually more or less covered with distinct pubescence or hairs, while in *P. coronarius* the calyces are usually glabrous, or nearly so. *P. grandiflorus* is later in blossoming, often being still in good full bloom when all blossoms have fallen from the various forms of *P. coronarius*.

Philadelphus pubescens, from Flushing, and *P. Columbiae*, from Rochester, cannot be distinguished for horticultural purposes from the *P. grandiflorus* in the Arboretum collection.

A plant labeled *P. latifolius*, from Flushing, appears to be the same, except that it is a day or two later in flowering, being now (June 25th) in about its fullest bloom.

Quite as late as this is a plant labeled *Philadelphus undulatus*, from Kew; it has medium-sized fragrant flowers which never more than half-expand, the petals keeping an open bell-shaped position.

A distinct Mock Orange in the collection is *Philadelphus hirsutus*, the seed of which was received from Tennessee. This has a stiff, erect habit of growth and is intermediate in time of flowering. The leaves are large, and the flowers, which expand from an inch to an inch and a half, are of a very pale yellowish or straw color and nearly scentless.

About the latest species to blossom is *Philadelphus Lewisii*, which, in the last week of June, is in its best condition, with all the buds not yet opened. The stems and branches are more slender than those of *P. coronarius*, the leaves are small, but abundant, and the flowers are pure white and expand about an inch in diameter. The petals are thin and delicate and ovate in outline. The small size of the blossoms is more than compensated in their abundance, from eight or ten to twenty delicately fragrant blossoms being common on the branchlets.

in early spring it is often mistaken for a flowering Forsythia at a little distance.

While it is not to be regarded as a showy or altogether satisfactory plant in this climate, the delicate and graceful little *Philadelphus microphyllus* is sure to give pleasure by its pretty and sweet strawberry-scented flowers. It is so different from its congeners that it is not always at once recognized as a "*Syringa*," to use a popular name commonly applied to the Mock Oranges, but which botanically and properly should be restricted to the Lilacs.

Arnold Arboretum.

J. G. Jack.

Injury from Overpruning.

IT would astonish any experienced orchardist to note the way in which the average farmer prunes his fruit-trees when he is once convinced that something must be done in this direction. Before such conviction comes to him he generally is of the opinion that to prune is to lose just so much fruit as the removed branches might be expected to bear for several years at least. But if some one in whom he has confidence succeeds in convincing him that there will be as much gained in



Fig. 45.—*Passiflora manicata*, in Santa Barbara, California.—See page 264.

Under the names of *Philadelphus Falconerii* and *P. Zeyheri*, the Arboretum has received from the Parsons nurseries at Flushing an interesting and anomalous Mock Orange, the origin of which is not known, and which cannot well be referred to as a form of any species in cultivation. It is a vigorous shrub, with rather small narrow leaves and narrow boat-shaped petals, which do not spread out horizontally, but remain more or less bell-formed, although the flower has a general star-like appearance. The calyx-lobes are narrowly pointed and quite glabrous. The flowers are slightly fragrant, and usually three or five are borne on a branchlet. It is altogether so very different from any other form in cultivation that it may be considered quite an acquisition.

A somewhat similar, but much inferior, plant was raised from seed sent from Paris as *Philadelphus laxus*. There are so-called double-flowering forms in cultivation, but they are not beautiful and not generally satisfactory. A yellow-leaved variety or form of *P. coronarius* is now well known, and is desirable in all gardens where hardy variegated or colored foliaged shrubs are wanted. When leafing

size as is lost in numbers, and especially if his attempts to sell his fruit have been met with complaint at its small size, he may take up the saw and axe. In that case he may commonly be expected to use these implements with the fury of a Sioux brave on the war-path.

I have just been looking over an orchard which was pruned last year in this woodchopper's style. The remark of one of the neighbors, after seeing the results, to the effect that the pruner must have been short of fire-wood, was a natural one. The trees were uniformly "pruned up"—that is, the lower limbs were taken off, and very little thinning done to let in air and light among the upper branches. Where limbs were taken off by the saw, stubs several inches long were left, while with the axe the cut was just as it happened. In neither case was any precaution used to prevent a removed limb from taking with it a considerable strip of bark. The wounds were not painted or otherwise protected.

But what has surprised the owner most (and it puzzled me some at first) is that while the "remains" of this orchard, in common with all Apple-trees this year, bloomed very freely,

almost no fruit has set, and the trees are now bare of anything but leaves. New branches are starting out everywhere from the ground up, and it is evident that all the vitality of the trees is being expended to repair the loss of wood. Since noting this, I have also observed a few trees in my own orchards, both Pears and Apples, which have dropped their young fruit, and in these cases it has been as a sequence of pruning last year, though it was done with moderation. This impresses upon me anew the importance of paying more heed to the proper forming of the heads of our fruit-trees by penknife pruning and disbudding, followed up with judgment and care all through the spring and summer. Shock is as pernicious to the vegetable organism as to that of men and animals, from the surgical point of view.

Newport, Vt.

T. H. Hoskins.

Sub-irrigation in Greenhouses.

SUBIRRIGATION in greenhouse work is receiving considerable attention, and the good results which have followed its use wherever it has been tried warrant further experiments. During last winter, in order to test the matter in a small way, without expense, a very simple scheme was hit upon which served the purpose admirably. Cementing the bottom of the bed to make it water-tight, as is commonly recommended, was dispensed with, and the only precaution taken was to double-board the bottom in such a way that the boards mismatched. It is doubtful whether there is any advantage in having the bottom absolutely water-tight, since the soil may then become so thoroughly saturated as to be unfavorable to the best development of the plant. The additional apparatus consisted of two old paint-kegs and a piece of worn-out hose. A hole was bored in the bottom of each keg, so that the thread-end of a hose union could be screwed into it, making a water-tight joint. These kegs were set at the end of the bed just a little above the level of the top of the soil. Small wedge-shaped cuts were made in the hose about three inches apart on alternate sides to allow the water to escape. The hose was coiled about the bottom of the bed in such a way that there were four lines running the length of it, and each end was attached to one of the kegs. Water could be poured into both kegs and enter the hose from each end.

At the first watering too much water was given. The soil did not begin to show moisture on the top until it was much too wet beneath, and the bed had to stand a week or more before the soil dried out, so that it could be used for planting. The ultimate results, however, were wholly satisfactory in every way. The ordinary soil of this section of Nebraska is not well adapted to greenhouse work. It is too heavy and soggy when wet, inducing fungi, and unsatisfactory results generally. Previous to this time there had been much injury from Lettuce mildew, and the lower leaves have been destroyed as fast as the plant could produce new ones at the centre. Planted on this subirrigated bed this trouble almost entirely disappeared, and a fine crop of Lettuce was grown.

This method of watering applies the water where it is most needed, and keeps the top reasonably dry, which is a great aid in preventing some of these fungus attacks. Subirrigation certainly promises to be the most satisfactory method in many lines of vegetable work at least, and it is likely to be used extensively. Moreover, no great expense is necessary in fitting the beds for it. One-inch wrought-iron pipe can be utilized to good advantage in conducting the water if it can be cheaply drilled for letting the water escape, as it no doubt can be. The bottom of the beds double-boarded with comparatively cheap lumber, or, at most, laid in coal-tar, and the outfit will be complete.

University of Nebraska.

Fred W. Card.

Correspondence.

Hardy Rhododendrons.

To the Editor of GARDEN AND FOREST:

Sir,—Many of the plants in a large and long-established collection of Rhododendrons in my garden are unsatisfactory. In some the habit is open and straggling; in others the foliage is badly scorched in early spring; others lose their flower-buds in cold winters; and others produce small trusses of flowers of poor washed-out colors. The collection is planted in deep moist peaty soil, so that the plants never suffer from drought, which I believe is more destructive to them than severe winter cold, and is well protected from the cold north-west winds which often blow here in February and March.

It is probable that I do not cultivate the best varieties. I

shall be much obliged to you if you will print in GARDEN AND FOREST a list of the most approved varieties of the Catawbiense hybrids, with such information about each as you care to give.

Middletown, Conn.

J. C.

[The following varieties have long been cultivated in the neighborhood of Boston, and of their hardiness in that climate there seems little question. A collection of these varieties would give practically the entire range of colors yet produced by the flowers of these plants, with the exception of the light ones with dark blotches on the upper lobes of the corolla. Many varieties of this particular race are exceedingly beautiful, and often very showy; none of them, however, have yet proved very hardy or satisfactory in our gardens. The list of varieties which can be relied upon contains:

Album elegans: light blush, marked with straw-color, fading white, very free-flowering. This produces erect branches, which sometimes grow to the height of twenty or twenty-five feet; it is, therefore, useful to place in the middle of a large bed, where the naked bases of the stems can be covered by lower-growing varieties.

Album grandiflorum: light blush, fading white. This is a strong-growing, vigorous, free-flowering variety of good habit. The foliage is excellent, and, altogether, *A. grandiflorum* is the best white or nearly white-flowered hardy Rhododendron available for our climate.

Alexander Dancer: light rose, with lighter centre. This variety, when well grown, produces as large, or larger, flowers and trusses than any other hardy Rhododendron with which we are acquainted; the foliage is excellent, but the plant lacks compactness of habit, often producing long sprawling branches.

Atrosanguineum: blood-red. One of the very earliest, as it is one of the hardiest, Rhododendrons, showing in the brilliant color of its flowers strong traces of the blood of the Indian Rhododendron arboreum, which appears more or less clearly in all the scarlet-flowered Catawbiense hybrids. This variety has the disadvantage of flowering so early that the flowers have faded before most of the other varieties are in bloom.

Caractacus: rich purplish crimson. This is one of the best Rhododendrons in the size and compactness of the trusses, in the size and color of the flowers, in habit, hardiness and foliage.

Charles Bagley: cherry-red. This is a late-flowering variety with a well-formed truss of brilliant flowers, with excellent habit and foliage.

Charles Dickens: bright scarlet. This is one of the best of the scarlet-flowered Rhododendrons, with good habit and foliage, although the flowers are smaller than those of several other varieties. It has the disadvantage of flowering before the varieties with light-colored flowers, with which it would otherwise make a good contrast.

C. S. Sargent: rich crimson. This produces large compact trusses, and has few superiors in the size and color of the foliage and in habit.

Cœrulescens: very pale lilac-blue or blush. This is a distinct variety, owing to the peculiar color of the flowers; it is a plant of rather loose habit, but free-growing, with long lustrous leaves, showing some traces of the blood of Rhododendron maximum.

Delicatissimum. This is a hybrid between Rhododendron maximum and some of the Catawbiense race of hybrids. The flowers are white, suffused with pink; the habit is excellent, and the foliage is large and unusually lustrous. This is one of the most beautiful of all hardy Rhododendrons, and has the advantage of flowering later than most of the Catawbiense varieties.

Everestianum. This has usually been considered the best Rhododendron for American gardens. No variety excels it in hardiness, in habit, and in its power to produce large crops of flowers year after year. The trusses are well shaped and compact, and the flowers are rosy-lilac, spotted with yellow and crinkled on the margins. To

many people their decided purple shade of color is not altogether pleasant; and it is difficult to group the plants satisfactorily with varieties with red or dark-colored flowers.

Gloriosum. A hardy free-blooming variety of rather loose and unattractive habit. The beauty of the flowers, which in color resemble those of an Apple-tree, is not surpassed by that of the flowers of any other *Rhododendron*, although the trusses are rather loose, and the individual flowers are not large or perfectly regular in outline.

Hannibal. A variety of good habit, with small trusses of rose-colored flowers.

F. L. Ames. This produces pale flowers surrounded with a broad band of rosy pink; the individual flowers and the trusses are large and well shaped, and the foliage is unusually large and fine. Young plants, the only ones which have yet been tried in this country, as this is a new variety, show an inclination to a loose, rather ungainly habit.

H. W. Sargent. This produces enormous trusses of crimson flowers and is the latest of all the varieties with dark-colored flowers. It is very hardy and the foliage is excellent; it lacks, however, good habit and usually appears as a sprawling open-headed plant, unattractive when not in flower.

Lady Armstrong. This variety produces pale rose-colored spotted flowers. It is very prolific, perfectly hardy and altogether one of the most beautiful and desirable of hardy *Rhododendrons*.

Lady Gray Egerton. Although a comparatively new and little-known variety, this is probably one of the best of the hardy *Rhododendrons*, with good foliage and habit and immense trusses of large, well-shaped, light mauve or silvery blush flowers.

Mrs. C. S. Sargent. This is one of the most promising of the newer varieties with the habit and foliage of *Everestianum*; the flowers, however, are bright pink with a large yellow blotch and crinkly edges; they are of good shape and produced in large compact trusses.

Mrs. Harry Ingersol. Deep rosy-lilac, with a conspicuous greenish or yellow blotch on the upper lobe of the corolla.

Mrs. Milner. A variety with rich crimson flowers in compact trusses, excellent foliage and compact habit.

Purpleum grandiflorum. This is the best of the purple-flowered varieties. No *Rhododendron* has a better habit, grows more rapidly or produces larger and darker-colored leaves or more numerous trusses of well-shaped flowers; their color, however, is disliked by many people, and it is difficult to group plants of this variety in a mixed collection; and, as far as possible, they should be kept by themselves. It is one of the latest varieties to bloom.

Roseum elegans. With rosy purple flowers. This is one of the best *Rhododendrons* in habit and foliage, although to some people the purplish shade of the flowers is disagreeable.

Sefton. This produces enormous trusses of dark maroon flowers and excellent foliage. It is the darkest-flowered hardy *Rhododendron*, and when in flower one of the most conspicuous and striking; it shows rather a tendency to an open growth and bad habit.—Ed.]

An Aquatic Garden.

To the Editor of GARDEN AND FOREST:

Sir,—The increasing interest in aquatic plants, and their collection and cultivation, is bringing into notice differences and distinctions, even among well-known species, which have until lately escaped attention. Again, the natural result of the cultivation of many varieties in the same waters tends to hybridization, the results of which are beginning to appear, though few of these new hybrids have been distributed. These points were especially impressed on me a few days ago in looking over William Tricker's collection of aquatic plants at Clifton, New Jersey. Mr. Tricker this season has connected himself with Mr. S. C. Nash, whose reclaimed swamp and aquatic

garden were illustrated in GARDEN AND FOREST in vol. v., pp. 498-99. Here is probably the largest outdoor heated tank in the country, with pits and accommodations for four plants of Victoria regia. Three plants only are being grown this season, but they are especially interesting as they are each of distinct habit.

Victoria Randii is recognized among growers as a distinct variety, both in its smaller leaves and the distinct color of the flowers. It does not seem to be known, however, that there are marked variations in what is supposed to be the normal form. Such variations are to be seen in the two plants now growing, especially in the difference of formation of the rims. One plant has leaves fifty inches in diameter with no sign of a rim; the other plant has sharply turned-up edges, even in a very young stage. The latter plant has sharply reflexed spines, like fish-hooks, on the stems, while the spines on the other variety are straight. There are also minor differences of color which do not seem important. I have read some sharp controversy between capable observers in the horticultural press regarding rim-forming. The writers were probably growing different varieties and correctly reported what they saw, with no suspicion as to all the facts.

Owing to the cold season, the sash had not yet been removed from the Victoria pits when I saw them, ten days ago, and the other tropical *Nymphaeas* were backward, though a few plants of *N. Zanzibarensis* were in flower. *Euryale ferox* does not receive protection here, and was growing strongly in the Victoria tank. The heated water of this tank somewhat hurries the *Nelumbiums*, which were showing their first buds. In one of the cold ponds was a large mass of plants showing many very double white flowers with broad-pointed petals. Resting on the water, these flowers were very striking in the sunlight, and distinct from anything previously seen. On close examination I found that they bore nearly forty broad petals, and were similar to fine forms of *N. alba*, with the distinct fragrance of *N. odorata*. They had no trace of pink, such as usually occurs in the petals of *N. alba candidissima*, yet, notwithstanding this and their fragrance, one would hesitate to pronounce the variety other than a specially double and bold form of *N. alba*. *Nymphaeas* are peculiarly modified by conditions of cultivation, both in form and coloring, and these modifications are very puzzling.

There were various seedlings under trial, the best of these being a large clear rosy one of perfect color, which it seems to retain until the flower withers. All the better-known hardy *Nymphaeas* were, of course, in full flower, *N. tuberosa* showing a special capacity for covering space with large leaves and abundant handsome large flowers. *N. gracilis* is an interesting day-flowering *Nymphaea* with narrow pointed segments. It is usually white, but some seedlings of a pure light blue were in flower. Mr. Tricker is having success with the Lace-plants, *Ouvirandra fenestralis*, whose curious reticulated leaves are among the most wonderful objects in the vegetable kingdom. It seems to flower while yet very small.

The various tanks and plantations at Clifton are kept up to their usual attractive standard by Mr. Nash, who spares no expense on his favorite hobby, which, as has been said before, has changed an unsightly swamp into a public benefaction. The abundant water-space furnishes also a field for experiments on a large scale, from which important results may be expected.

Elizabeth, N. J.

J. N. Gerard.

Orchids in New York.

To the Editor of GARDEN AND FOREST:

Sir,—A fortnight ago the Cattleyas in the well-known collection of Mr. Hicks Arnold, in this city, were making a remarkable display. Of two superb specimens of *Cattleya Arnoldiana*, a rare hybrid raised by the Messrs. Sander, one was carrying four fully developed blooms, and the other six blooms on two spikes. The white form of *C. intermedia*, another exceedingly rare plant, had two strong spikes. Such white forms of *C. Mossiae* as *Reineckiana*, *Wagnerii* and *Wagnerii ampliata* were all in full bloom, and the last one was especially interesting on account of the admirable form of its sepals and petals and its deep orange throat. The best white variety of *C. Gaskelliana* was also in bloom in this collection, showing two fine flowers, and the distinctly mottled variety of *C. Mossiae* known as *Hardyana* was just opening four fine blooms.

Among the *Cypripediums* such striking varieties as the American hybrid *Josephianum*, *C. dilectum*, *C. macropterum*, *C. niveum magnificum* and *C. leucorrhodum*, and many more were all growing in the healthiest condition; and together presented a spectacle which any intelligent lover of Orchids would go a journey to inspect.

South Orange, N. J.

Joseph A. Manda.

Notes.

Work upon the new park at Corlear's Hook, in one of the most crowded parts of our city, is immediately to be begun, upon plans elaborated by Mr. Calvert Vaux.

The Raisin Growers' Association of Fresno, California, have decided that no raisins shall be sold except on board the cars at points of shipping. This regulation is meant to insure uniform packing and to permit no inferior samples to go out, and to prevent any such cut in prices as that which brought disaster to the industry last year.

It is good practice to pick promptly all the ripe or decayed fruit from Cucumbers and Tomatoes. Even when seed is wanted, no more than one fruit should be allowed to ripen on a plant from which a continuous supply is expected. New fruits cease to set if the old ones are allowed to ripen, and the prompt removal of fruit before it matures will keep the plants growing and yielding much longer.

We have already given some account of that weed known as the Russian Thistle, or Russian Cactus, although it is not related either to the Thistles or the Cacti. Botanically it is *Salsola kali* tragus, and those who wish to learn all the known facts in relation to its history, together with the means available for its eradication, can find them in Bulletin No. 15, lately published by the Division of Botany, United States Department of Agriculture. The bulletin has been prepared by Lester Hoxie Dewey, Assistant Botanist of the Department, and it is illustrated with maps and figures.

The people of southern Colorado are preparing petitions asking that Congress shall reserve the region called the Mancos Cañon as a public park. This region is remarkable for its natural features, and contains the most interesting remains of the Cliff-dwellers which exist in the United States. If not soon protected, its archæological interest, at least, will be greatly impaired. Many of the houses are in very inaccessible positions, one of the finest occupying a narrow ledge of rock 600 feet above the bottom of the cañon; nevertheless, their inaccessibility does not protect them from the ravages of curiosity-hunters.

A Pennsylvania correspondent of the *Rural New Yorker* mentions among the merits of the Japan Quince as a hedge-plant, that it does not naturally grow much taller than the proper height for a hedge, and that it quickly reaches that height; cattle will not browse it or break it; it does not sucker much; its foliage has a rich color, which is held all the season through; it blooms every year, and when in flower it is beautiful; it is readily propagated by roots cut into inch lengths from any old plant in the autumn and kept in damp sand until the spring; it has great endurance and longevity; its stems are continually renewed from the collar, and it is easily trimmed and kept into tidy shape.

One of the most curious trees in Germany stands on the left bank of the River Oder, in Ratibor, Silesia. It is a Maple, at least one hundred years old, which has been twisted and cut into a sort of circular two-storied house. A flight of steps leads up to the first level, where the branches have been gradually woven together so that they make a firm leafy floor; above this is a second floor of smaller diameter, formed in the same way; and the ends of the branches have been woven into solid walls, and cut so that eight windows light each of the apartments. Below the first floor, at the level of the second, and at the top of the tree the boughs have been allowed to grow out naturally, while the intermediate walls and the edges of the window-like openings are kept closely clipped.

A correspondent of the *North-western Lumberman* states that last winter, in St. Louis, he found that while white poplar was selling slowly and there was no demand for yellow pine, and hardly any for cypress, cottonwood was in active request. The lower grades of cottonwood are used for packing boxes, vegetable crates, barn boards, sheathing, etc., and the upper grades are largely made into wagon-boxes, where the toughness of the wood renders it specially valuable, while clear stock under twelve inches wide serves for flooring, ceiling, casing and other purposes where pine is commonly used. When properly dried, cottonwood is said to be equal to poplar for many purposes, and because of its lightness, the ease with which it is worked, and the way in which it takes and retains paint, it answers for many uses where pine was once considered indispensable.

In Europe tobacco-pipes are made principally of two kinds of wood, one is Cherry and the other is the so-called Briar.

This latter is really a Tree Heath, *Erica arborea*. It is called by the French Bruyère, which has been corrupted into Briar, and great quantities of it are used in Austria and Italy in making pipes. Now the *Agricultural Gazette*, of New South Wales, states that the root and trunk of a small tree called Beef-wood (botanically *Hakea leucoptera*) is being largely used and is highly prized by smokers as a material for pipes. It is a Proteaceous plant, related to the Honeysuckles and Grevilleas, and its common name is derived from the color and general texture of the wood. It also goes under the name of the Needle-bush, from the prickly character of its leaves. It is a small tree or large shrub which rarely attains a trunk diameter of more than nine inches and grows in the arid interior of the country.

The Italian-Swiss agricultural colony at Asti, Sonoma County, California, as described in a recent issue of the *Pacific Rural Press*, is a prosperous settlement in the beautiful Russian River valley. The organization was effected in 1881, and fifteen hundred acres of warm hill-side and rich valley land are now planted in vineyards and orchards, and additional tracts are being cleared and planted. Many of the plants were imported direct from Italy, and now the Olive of Lucca and the Riviera, Orange-trees from the Mediterranean, Fig-trees from Naples, Barberino di Val d'Elsa and Vines from Italy, thrive side by side in the colony. Thrift and good work are everywhere evident, and experienced viticulturists and horticulturists follow the same general methods practiced in Italy. The buildings at Asti are among the best of their class, and include a concrete storage-house for wine with a capacity of more than 1,000,000 gallons.

During the past week plums, which have been coming from California in great abundance and variety as well as in admirable condition, have been selling at wholesale for as high as five dollars a half-crate. Apricots from the same state have also been beautiful in color and in good condition, but they sell slowly, while cherries, with the exception of the variety Royal Anne, have sadly fallen off in quality. The rapid growth which all fruit and vegetables have made during the past hot weather is shown by the fact that huckleberries are now coming from New Jersey, which but a fortnight ago were coming from the Carolinas, and green corn from the same state is in the market. The best strawberries used in this city are now picked as far north as Oswego, and next week they will be coming in from Maine. Currants have rarely been as abundant and cheap as they now are, and they can be bought for from two to two and a half cents a pound. Hart's Late oranges are still coming from Florida, and sell at from \$4.00 to \$5.00 a box in spite of the abundant receipts of good Rodi oranges from Sicily, which are the standard summer fruit.

Commenced in 1848 by the late Filippo Parlatore, the "Flora Italiana" has at last been completed, with the exception of a part of the seventh volume, the concluding part of the tenth and final volume having been issued in April of the present year, although it is Professor Teodoro Caruel who has completed it, Professor Parlatore having died several years ago. The Flora of Italy is one of the few modern Floras of large countries or of extensive botanical regions which has come so near completion. The two notable exceptions are Bentham's "Flora of Australia" and Boissier's "Flora of the Orient." The other great Floras of recent times still remain in a fragmentary condition. Gray finished only half of the "Flora of North America" and Sir Joseph Hooker has still at least one more volume before him before his "Flora of British India," which has pretty constantly engaged his attention for the last forty years, will be completed. Oliver's "Flora of Tropical Africa" and Harvey & Sonder's "Flora of Southern Africa" are still incomplete, while the death of the author stopped Cossons' "Flora of Algeria" in its early stages. The "Flora of Brazil," commenced by Martius many years ago, the first part having appeared in 1846, is still appearing with considerable regularity, and there is some probability that it may now be completed within a reasonable time. Floras of Mexico and of central America, of Chili and Peru, of Argentina, of China and Japan, and of Europe as a whole are still needed. During the last century a good deal has been learned of the characters, relationships, uses and distribution of the plants that cover the earth's surface; but our knowledge of plants, however, is still fragmentary and often unsatisfactory, and there is still a vast amount of work to be done by morphological and economic botanists, in spite of the statement which has become fashionable of late in some quarters, that there is no real work left in botany for any one but the physiologists.

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Horticulture in England and America.

IN some correspondence which we published a fortnight ago a few of the essential points of difference between the principal flower shows of England and of this country were pointed out. More striking, however, than any difference in the material collected for exhibition, or its variety or quality, or arrangement, is the difference in the people, taken in a mass, who visit a flower show in London and those who visit one in New York or Philadelphia. Of course, the real value of any given exhibition cannot be properly gauged by the number or the appreciative interest of those who come to see it, but in the long run the character and quality of a series of exhibitions will depend more upon those who come to see the flowers than upon any other influence. That is, the demand in this case as in others will create and control the supply. An exhibition which is made for the inspection of a thousand persons who have a fairly good general knowledge of plants, who have gardens in which they take a personal interest, who have become specialists in some direction and have devoted themselves to the study and improvement of certain plants or certain families of plants, will be constituted and conducted in quite a different way from one which is meant to please a thousand persons who imagine in a vague way that they love flowers, but who have little accurate knowledge of them and take no personal interest in their cultivation.

In the first instance, the grower and exhibitor knows that any triumph of horticultural skill will be appreciated, and this will insure greater care in producing perfect specimens; collections of different varieties of certain plants will be displayed for the delight of those who can appreciate slight modifications in structure and delicate variations of form and color; and novelties will be shown for those who wish to make complete collections of any class of plants. The exhibition will cover a wide range, because in the broad domain of horticulture there will be hardly a region which has not special attractions for the taste and fancy of many visitors, whose interest must be arrested and held.

Altogether different will be an exhibition prepared for persons who lack this precise horticultural knowledge, although their natural taste and appreciation of what is beautiful may be quite as good. Under such conditions more thought will be given to arrangement for general effect. If it is a spring exhibition, for example, we should not look so much for a complete collection of Narcissi as for masses of some of the more showy kinds effectively grouped. Altogether, we should expect an exhibition which would be less instructive from a horticultural standpoint, although it might be more impressive as a spectacle when viewed as a whole. All this means that a typical flower show in any community will indicate pretty accurately how large a place in the life of that community horticulture fills.

The best exhibitions in England are, no doubt, capable of great improvement, but they are better, from a purely horticultural point of view, than ours are, because our people generally know less about flowers and plants, and therefore are less intelligent judges. It is true that an American visitor at an English flower-show is apt to overestimate the general knowledge of the great British public on this subject, even when he remembers that in a small and densely populated country it is much easier to bring together a large assemblage of intelligent plant-lovers than it is in America. In such a place, where every other man one meets is a horticultural expert in some direction, one is apt to think that a knowledge of floriculture and horticulture is universal. A little investigation will soon show that it is really but a small fraction of the English people who have any knowledge of plants worth speaking of, but yet the ratio of intelligent plant-lovers and plant-growers to the entire population is much larger than it is here. This does not mean that the general taste of the English people and their ability to appreciate natural beauty is any higher than it is with us, but that the proportion of the people in the British Islands who take an interest in growing plants of their own is larger than it is in America.

There is no need to state the reasons for this state of things. That America is a newer country; that our population is less fixed, and therefore without such strong local attachments; that we are generally more in a hurry and spend less of our leisure at home; that we have shorter seasons and more trying summers,—reasons like these will suffice without enumerating any of the more subtle influences which help to separate us from our mother country in our habits of life. But, after all, there is nothing which ought to cause discouragement to those who feel that a more general interest in horticulture here would make American life fuller and American homes happier. At the outset our fathers made the natural mistake of copying English methods of planting, which were unsuited to our soil and climate. We have just begun to unlearn our errors of this nature, and the observant eye can plainly detect an encouraging tendency to adapt our horticultural methods to our surroundings and to develop an American horticulture for Americans. There is a great deal to criticize in the gardens of our fashionable watering-places, and in the country estates which some of our men of wealth are making, and their sins against every canon of fitness and refinement are not mitigated by the fact that many of the show places of aristocratic England are quite as offensive.

On the other hand, no part of the world has ever, in the same time, shown such an enormous growth in the business of nurserymen and florists as has taken place in this country during the past ten or twenty years. Much of our horticultural literature, periodical and other, will compare favorably in quality with any in the world. From all parts of the country we hear of projects for arboreta and botanic gardens, and although many of these are crude they are all evidences of a prevalent desire among people to do something in the interest of scientific horticulture. Opportunities for studying the theory and practice of gardening are offered in several of our agricultural colleges, and there is an increasing effort among young people to acquire a

knowledge of trees and shrubs and flowers. Noteworthy, too, is the effort of our growing towns and cities to secure areas for parks and public gardens. Besides this, we already have parks and private places, which, for unity and consistency of design, for breadth and simplicity of treatment and for the absence of features essentially petty and vulgar, are not excelled by any in the world, and inquirers for advice from competent landscape-gardeners are increasing in numbers every year.

Gardens which should be pictures of peace do not naturally find a place in a country where life is a continual struggle with the untamed forces of nature. Large portions of our country are still in the pioneer stage, and even the older-settled regions have not advanced entirely beyond the influence of frontier traditions. We have inherited the idea that forests are inhospitable; that woodlands at the best are only waste lands, and it is only of late years that there has been any development of the sentiment of affection here for trees and native wild growth. The subjugation of nature has been carried on with needless cruelty, and yet, as our surroundings have become more stable and secure, garden-art has kept pace fairly well with other humanizing and civilizing influences. When we once thoroughly learn the great lesson that the highest art is found in following suggestions of nature, an endless variety of climate and of season awaits our effort, and with an untold wealth of native plants America should have the most effective and diversified gardens in the world.

Practical Work for Forestry Associations.

FORESTRY associations have done as yet little more than talk. This is quite natural and legitimate, since their first object is to make propaganda for an enlightened general appreciation of the necessity of rational forest-treatment. Many persuasive arguments must be used before such an appreciation can be sufficiently widespread to lead to action. Meanwhile, here and there the opportunity for direct active and practical work presents itself, if not in behalf of the forest, at least in behalf of the trees in our streets and parks. These are nearer objects to many than forests; they belong to the public, and interest in them may well serve the useful purpose of inculcating that love and intelligent appreciation for trees everywhere which may ultimately lead to the establishment of a sound forest-policy for the country.

The planting of ornamental trees on Arbor Days and on other occasions has been often encouraged by forestry associations, but the Genesee Valley Forestry Association, at Rochester, has entered another field of usefulness in freeing the shade-trees of the city from insect pests. Last year the association offered a series of prizes to the children of the public schools for gathering the cocoons of caterpillars, with encouraging success. This year, in addition to the previous prizes, a special prize of ten dollars was offered to all who would bring a larger number than was brought in 1893 by any one pupil (44,900). As a result, on June 20th, each of sixty-five scholars received a ten-dollar gold piece, with an extra five dollars each to the two boys who had the largest count. The total number gathered and certified to by the teachers was 8,800,200, and the city is relieved of a pest which has in former years driven many families into the country at an earlier date than they would otherwise have sought their summer outings. The money for the prizes, which amounted to considerably more than had been anticipated, was subscribed by citizens, the Common Council adding one hundred dollars, and money was never spent more effectively for such a purpose.

Now, all this is the result of talking, in the first place. The Genesee Valley Forestry Association owes its origin to public talks by two members of the American Forestry Association. One of Rochester's prominent citizens, Mr. Arthur S. Hamilton, took up the ideas advanced and persuaded others to interest themselves in the subject, and so

the association was formed, and being composed of business men it looked around for business and found it. Certainly the formation of local associations, which can apply themselves to such definable tasks as that of the caterpillar crusade is to be encouraged as one of the most hopeful agencies in all matters relating to forests and to trees both in city and country.

The Æsthetic Value of Roads and Walks.

IN any landscape-gardening scheme the lines of roads and walks present one of the most important problems. These lines are essential to finish and propriety, but not on account of their own artistic value. They are distinct and prominent in appearance; they are hard and formal, and their general effect is unvarying and intractable. What beauty they have is derived, in the main, not from themselves, but from their accessories and associations. But since they cannot be dispensed with, they must be treated so as to make their special features as unobtrusive as possible. Fortunately, they can be made to help the design in most cases; and they can always be made to injure it. The injury is due to superfluous lines of travel oftener than to ungraceful ones. The very definite and intelligible nature of a drive or walk inclines the designer, whether owner or professional landscape-gardener, to try to give variety and completeness to his large spaces by inserting pronounced lines which, if they are not imperative for reasons of utility, have at least a fixed beginning and end; and on this account seem reasonable and appropriate to minds not yet skilled to grasp the subtle principles of composition, while to the same minds it is difficult to justify indeterminate shapes of planting for which the locality seems to offer no suggestion.

But this is not the only reason superfluous roads and paths are popular. The designer often finds a certain satisfaction in filling up his drawing with oval and flowing curves, and his employers enjoy such drawings still more keenly. Again, a beaten way, especially if its end is not in sight, saves the mind the labor of conjecture as to the best route; if familiar it furnishes a definite length and direction for the journey; if unfamiliar, there is still the certainty that some object is to be reached which will make an expedition worth while. Such reasons as these, though apparently trivial, excite a desire for formal ways for the more practical provision of dry and solid lines of travel when the grass is wet and the mud is soft. People setting out for a walk will usually keep to the hackneyed foot-way, and this irrespective of the time of the year and condition of the ground, even though they are quite sensible of the superior comfort of the turf for walking on. These reasons, and the general attractiveness of curved lines—whether they find their need in the contour of the surface and position of the landmarks or not—have sacrificed many rods of rich grass to strips of costly and useless macadam.

In laying out the courses of beaten track, the first and foremost question is that of utility. When it has been determined what points are to be connected, the lines themselves should be controlled first of all by directness. A beaten way between two points should be the shortest possible; but in landscape-gardening the shortest distance between two points is not necessarily a straight line, or even an approximation to it. The shortest route is always the most convenient, and its course may, therefore, be regulated by the shape of the ground, the position of large trees, the leading to objects of interest or points of vantage for views and similar reasons; while convenience, too, may be considered to rule the bending of a road to avoid intrusion on a lawn, or the construction of lines out of harmony with those of the buildings. For convenience or fitness is quite as important to the useful as to the beautiful.

Thus far, roads have been treated of merely as necessary parts of a design whose special features can even be used to set off and display it in some measure. But they are quite capable of being made to take on an artistic value of

their own. The wheelway bordered with trees has a peculiar charm, derived as much from the associations of traffic as the foliage overhanging the sides; and this charm belongs (though in a somewhat different way) to the formal avenue as well as to the country lane overhung with thick and various boughs. Any one can feel the attraction of a road or path bending out of sight behind a screen of leaves. Occasional openings in the planting, to allow the traffic to be seen from the lawn, often add the one thing wanting to complete the landscape-gardening scene, namely, animation.

And lastly, the lines of permanent way may in themselves be a source of pleasure as they are dignified and harmonious, or unsatisfactory as they are crude and uncertain. Forms so large, definite and diversely sweeping, receiving so many new outlines from the effects of foreshortening, are of actual artistic value if used with due subordination to their surroundings. Few rules can be laid down for the construction of æsthetic curves. An eye naturally good, and sufficient training alone will discover a line that is intrinsically beautiful, and determine how straight lines can best be joined to curved ones, and how they are to be managed at such sudden changes of direction as where two roads meet, and to foresee the effect when they are transferred from the bird's-eye view on the paper to the foreshortened one on the ground. Above all, let them be carefully considered when they can be viewed from a height where the whole scheme, or a large part of it, can be seen at once, and where both its merits and defects will seem more obvious. When, therefore, the general direction has been fixed upon, let the lines of travel be ordered as carefully as those of the boundary; a slight irregularity, or a few inches or feet added to or subtracted from the swell of a curve may pass unnoticed by ninety-nine people; but the hundredth may be the capable critic, in whose judgment the work will stand or fall, and whose voice will ultimately be that of the jury who, in the natural course of things, come to pronounce the final verdict on any work of art.

No part of a design, then, deserves more care than the lines of beaten track; not the care of the expert of the compasses and curve-ruler, who piles ovals upon circles for their own sake, and fits the whole complication into the boundary line with the accuracy of a Chinese puzzle, but the care of the prudent inventor, who has learned not to mistake the means for the end of his art, and to understand that the clumsy works of picks and rollers cannot be objects of beauty unless as mere supplements to the delicate and inscrutable achievements of vegetable nature.

Pittsburgh, Pa.

H. A. Caparn.

The Tupelo, *Nyssa sylvatica*.

FOUR years ago we published an interesting illustration (see vol. iii., page 490) of a group of Tupelo-trees growing near a pond in West Medford, Massachusetts. The trees represented show the form which they often assume in low swampy ground in the middle states and New England—that is, they have long lateral branches, spreading horizontally or drooping at a slight angle, and forming a rather broad flat top. Few of our native trees, however, differ so much in habit, and on page 275 of this issue we give the portrait of another Tupelo, or Pepperidge, as it is commonly called in the middle states, which stands alone on somewhat higher ground in Chester County, Pennsylvania. Dr. J. T. Rothrock, to whom we are indebted for the photograph of this tree, writes that it is about forty feet high, with a trunk diameter of eighteen inches, and although it differs essentially in form from the trees in our earlier picture, it is, nevertheless, quite as truly a representative tree as the others. On the stony mountain-sides of Centre County, Pennsylvania, and other parts of that state the tree often attains a height of sixty feet, as it often does in the middle states. In the rich soils of the lower Ohio valley and on the slopes of the Alleghanies, in

the Carolinas and in Tennessee, it is occasionally a hundred feet high, with a stout trunk five feet through. The Tupelo is at home in low wet lands among water-loving trees, like the Swamp White Oak, the Black Ash, the Scarlet Maple and the Hornbeam, while it associates on higher ground with Magnolias, White Oaks, Black Walnuts, Wild Cherries, and in its wide range of distribution and under such different surroundings it is not surprising that it assumes various habits. Nevertheless, it is always individual, always picturesque, and if planted for ornament in any situation, low or high, it invariably gives pleasure, for it is a beautiful tree. In form it is always attractive. Sometimes it branches close to the ground, but oftener has a stout, though not long, straight trunk covered with light brown, deeply furrowed bark, which is often curiously divided into hexagonal sections. The upper branches are twiggy, usually crooked, sometimes so much so that the word "kinky" alone describes their shape. The firm green leaves are glossy, as if they were varnished. They are rarely disfigured by fungi or by insects, and in autumn they turn to a red so deep and glowing that the Tupelo is among the most conspicuous of our trees at a season when the whole forest is aflame. The dark blue fruits are not strikingly ornamental, but they are a favorite food for the robin and the flicker in the autumn.

One reason why the Tupelo has not been more generally planted is that its long roots, with few rootlets, make it a difficult tree to transplant. It is easily grown from seed, however, and while yet small the seedlings can be set out where they are to remain, or by being frequently shifted in nursery rows they can be prepared for safe transplanting later. The wood is soft, but tough and difficult to work on account of its twisted grain, but the difficulty with which it splits makes it sought for by axemen and others for the heads of beetles, for the hubs of wheels, for ox yokes and similar purposes; it is not durable when exposed to alternations of wet and dry, but when kept constantly in water, and especially in salt-water, it lasts for a long time, and, therefore, gives great satisfaction when used for keels in ship-building. Its beautiful light color adapts it for inside finish, but its liability to warp and check when drying has discouraged its use. It has been recently stated, however, that if the trees are girdled and allowed to stand a year before they are felled this difficulty will be largely avoided.

Besides, the Tupelo, which is also called the Black Gum and Sour Gum in the southern states, there is a variety *Nyssa sylvatica*, var. *biflora*, an aquatic tree growing in the ponds and marshes of the southern Pine barrens; the Sour Tupelo or Ogechee Lime, *N. Ogechee*, a rare and local tree which inhabits the swamps of the Ogechee Valley and western Florida, and the Tupelo Gum or Cotton Gum, *N. aquatica*, a tree a hundred feet high, of southern range, very common in the bottom-lands of the lower Mississippi valley, and attaining its greatest size in the Cypress swamps of western Louisiana and eastern Texas. In addition to the American species, there is one, *Nyssa arborea*, belonging to southern Asia and distributed from the Himalayas to the Island of Java, and Dr. Henry has discovered a Chinese species which is known as *Nyssa Sinensis*.

Foreign Correspondence.

London Letter.

NEW GARDEN PLANTS OF 1893.—A complete list of all the new introductions of last year forms Appendix II. of the *Kew Bulletin*, which may be had from the publishers, Eyre & Spottiswoode. The labor the preparation of such a list involves is much greater than appears on the surface, and such as only an institution like Kew could be expected to afford or undertake. It forms a most handy reference-list, as it includes every plant brought into cultivation last year, and of which any record was published in English or for-

seign periodicals. A reference is given under each plant to the publications from which the list was compiled, and this is followed by a brief description of the plant, sufficient for ordinary purposes, with the name of the person in whose collection the plant was first noticed. It is intended to rearrange these lists in decennial parts. Botanists as well as horticulturists must find such a sweeping together of scattered references and descriptions of considerable usefulness.

LATHYRUS SPLENDENS.—We are anxious to know more about this plant. I have seen several references to it in *GARDEN AND FOREST*, but never saw flowers of it till to-day, when a correspondent in the Isle of Wight sends it for name. What a gorgeous thing it is! the flowers as fine and effective as the flowers of *Erythrina crista-galli*. Is it hardy in the northern states, and is it successfully grown in gardens in America? I see Mr. Orcutt, in *GARDEN AND FOREST*, calls it the Pride of California and says it likes plenty of heat. Mr. Kellogg's description of it as a perennial climbing vine which creeps over bushes, and when in flower presents the illusion of a grand flowering shrub, whets the desire for it. I cannot understand how so beautiful a plant, which was discovered in southern California seventeen years ago and evidently has been cultivated in American gardens a dozen years at least, should have remained unknown to us here till now.

PRIMULA IMPERIALIS is still with us, a fine specimen of it being now in flower in a cold greenhouse at Kew. It will be remembered that this species first flowered at Kew in 1891 after many attempts to introduce it from its alpine home in Java, where Wallace saw it thirty years ago with flower-stems three feet high and leaves eighteen inches long. Until it was grown and flowered at Kew, side by side with the Himalayan *P. prolifera*, the wide difference between these two, which had been previously united as one species, was not fully recognized. The "Royal Primrose," as Mr. Wallace calls it, is a glorified *P. japonica* with orange-yellow flowers. I believe Messieurs Lemoine & Son, of Nancy, possess a stock of it. I may warn cultivators who wish to succeed with this species that it cannot bear bright sunlight—a moist, partially shaded, cool-in-summer position being what it prefers. It also likes rich loamy soil and plenty of water.

PHORMIUM HOOKERI.—This plant is now flowering for the first time at Kew. It has dark-green flaccid leaves six feet long and nearly three inches wide and compound spikes of yellowish-green flowers, the tallest spikes being six feet high. There is a marked difference between this and *P. tenax*, the New Zealand Flax, both in foliage and flowers. Sir Joseph Hooker, when describing *P. Hookeri* from a plant flowered in a garden in Cornwall seven years ago, says it was first sent to him by Mr. R. Gunn, of Tasmania, who found it in 1864 on the Waitangi River in New Zealand, where it grew pendulous from almost perpendicular rocks in great abundance. The Kew plants are grown in the temperate house, but I have seen examples in the open air in Cornwall, and for several years three plants flourished in a sheltered corner out-of-doors at Kew.

ELÆOCARPUS CYANCUS, also called *E. reticulatus*, is one of the most charming of greenhouse shrubs, a plant of it six feet high, with a bushy head, being now covered with racemes of elegant white drooping bells half an inch long and wide and beautifully fringed. Grown in a pot in a sunny place out-of-doors during summer and housed in a cold greenhouse in winter, this shrub flowers freely and is most decorative. The leaves are oblong-lanceolate, three inches long, dentate and dark green, the racemes springing from the axils of every leaf. This species is a native of Australia, from whence it was introduced in 1803, but I question if it is known in half a dozen gardens in England now. According to Bentham, it sometimes forms a tree sixty feet high. In addition to the flowers the drupe-like torquoise-blue fruit are very ornamental. *Elæocarpus* is a large genus of *Tiliaceæ*.

MITRARIA COCCINEA is a beautiful little pot-shrub which

deserves a place in every collection of conservatory plants, or it may be grown out-of-doors in such favored localities as Cornwall and south Ireland. It grows very freely, forming a dense bush if the shoots are kept in check by pinching during growth, and it flowers freely and continuously in spring and summer. Years ago it was a popular plant in English gardens, and I remember it being grown by market-nurserymen in a provincial town, where it soon became a popular window-plant. It has small bright green, ovate-toothed leaves and axillary flowers, which hang downward on slender stalks two inches long, each flower being a fleshy bottle-shaped tube over an inch long, colored bright scarlet, with a tinge of yellow in the throat. It is a native of the island of Chiloe, and was introduced by Messrs. Veitch, who first showed it at Chiswick in 1849.

LYCHNIS VISCARIA, a British plant, has been improved by cultivation and selection until we have now in the variety called *Splendens* a superb plant for the open border, or even for summer bedding, two large round beds of it being now very attractive at Kew. The root-stock is woody and perennial, the radical leaves about six inches long, narrow, lanceolate, and the flowers are in erect crowded panicles a foot and a half high, each flower an inch across, double, and of a rich carmine-pink color. In color-effect they are equal to the brightest of Brompton Stocks, but the panicles are more elegant. This is the third year that these two beds have made a good display in June. Probably the excessive wet of the last few weeks has been favorable to the plant, for it is finer this year than it has ever been. It is easily propagated by division. The Kew plants came originally from Messrs. T. Ware & Sons, Tottenham.

ARISTOLOCHIA GOLDIEANA is still one of the most wonderful of all flowers, although the advent of *A. gigas* *Sturtevantii* has familiarized us with big-flowered Birthworts. There is, however, a wide difference between these two, for, while the latter is a robust, free-growing, free-flowering vine, with the limb of the enormous flower flattened out, suggestive of a very broad-brimmed hat, *A. Goldieana* sends up its stems annually from a tuberous root-stock, and flowers only on the very young shoots. The buds are formed before the shoot is a foot long, and then a struggle takes place between bud and growing shoot; if the bud gets the upper hand it develops rapidly, and the shoot grows slowly, but if the shoot wins in the struggle, then it grows as fast as a Bean, and the bud falls off. At Kew, *A. Goldieana* is flowered almost every year. It is grown in a pot in the hottest house, where, during summer, it receives liberal treatment till the shoots ripen. It is then forced to rest and kept quite dry till the following spring, when it is shaken out of the old soil, repotted in peat and loam, and kept in a perpetual steam almost till the buds are well advanced. Unless this treatment is carefully followed out *A. Goldieana* will not flower. And what a flower it does produce, a succulent funnel two feet long, contracted and bent over in the middle, and then widening upward, till at the mouth it is over a foot in diameter, with three short tails. The color of the lower part of the tube is pale yellow, the upper being green-yellow, with purple reticulating veins; inside the mouth is orange, with a thick net-work of purple lines running into a blotch of purple at the apex of the hairy trap-like throat. *A. Goldieana* is a native of Old Calabar, where it grows in woods, the flowers resting on the ground. It can easily be tracked from a long distance when in flower by its powerful and disagreeable odor.

London.

W. Watson.

Plant Notes.

IPOMÆA RUBRO-CERULEA.—This Morning Glory has, of late years, been cultivated in California under the name of Heavenly Blue, a title which can hardly be called an exaggerated description of its color, which is that pure tint seen in the flowers of *Salvia patens*. At one time the plant was said to have originated in the garden of a California florist, but

there is little doubt but that it is the same plant which was cultivated under glass in England sixty years ago, and it probably reached southern California by the way of Mexico. Mr. E. D. Sturtevant writes that in his opinion it is the most beautiful annual climber in cultivation. It is entirely distinct from the common Morning Glory and pro-

Jersey for two seasons, where it climbs to a height of some twenty-five feet, and though coming into bloom late it amply repays cultivation there as it will elsewhere.

AMORPHA CANESCENS.—We have more than once called attention to the Lead Plant of our western prairies, one of the best of the leguminous shrubs which bloom at this sea-



Fig. 46.—A Tupelo (*Nyssa sylvatica*) in Chester County, Pennsylvania.—See page 273.

duces flowers sometimes three and three-quarter inches across. Last summer, in California, it covered a fence on Mr. Sturtevant's grounds sixty feet long on both sides, and at one time the fence and foliage were both nearly hidden by the mass of flowers. It has also been grown in New

son. It has bright blue flowers, which appear in a terminal panicle of slender racemes, and last a long time, and their beauty is increased by the soft gray color of the foliage. The plant looks much better when it is cut back after flowering, as it assumes a more compact growth and the

leaves grow much larger. It has deep roots, which enable it to endure drought, and it will be found attractive and interesting in any shrubbery.

ROSE CRIMSON RAMBLER.—Plants of this Rose were not received in America until late last autumn, and growers who wished to work up a stock could hardly afford to take the chance of losing them, and therefore few were left out-of-doors during the winter to test their hardiness. The Rose has bloomed in several commercial Rose-houses this year and has fulfilled all that was expected of it as a free and rapid grower, with good substantial foliage and abundant flowers, which are of a rich color, without any tint of purple, and which last a long time when cut. We have heard of some plants that came through the winter without any protection, but so far as we know none of these have flowered. It is to be hoped that the Crimson Rambler will prove hardy because there are few good hardy climbing Roses, and its large corymbose clusters of blood-red flowers, glowing in the sunlight, would make it an admirable plant for the decoration of porches. We have spoken of this Rose several times within two years, and Mr. Watson gave its history in one of his interesting weekly letters. It was brought from Japan by an engineer named Smith, who sold it to a Mr. Janner, of Edinburgh, from whom Mr. Turner purchased it, leaving only one plant with Mr. Janner. It is quite hardy in Scotland, and the original plant has attracted much attention on the front of the dwelling-house of its owner. The plant received a first-class certificate under the name of "Engineer" from the Royal Horticultural Society as long ago as 1890. It is one of the many forms of *Rosa multiflora*, some of which are perfectly hardy and some are not. Any one who has tested it out-of-doors will confer a favor by reporting upon its behavior.

GLADIOLUS AURANTIACUS.—This is among the earliest to flower of the true species of this genus, which are not sufficiently hardy to endure our winters. It has attractive flowers of a reddish-orange shade on a lax spike, the small inner segments being somewhat greenish. They are of moderate size, widely opened, and are borne somewhat sparsely. *G. Leichtlinii* is a handsome species, with pure salmon-colored flowers of the same general form and habit.

THE GRONWELLS.—We have in former volumes spoken of *Lithospermum prostratum* as a valuable half-shrubby plant for rock-work with the intensely blue flowers which characterize several other members of the Borage family. It does not seem to be perfectly hardy in the cold portions of the country, for, although it will survive our winters, it seems to get weaker, and finally dies out. Where it will live it needs a warm dry place, and is then singularly pretty. Some time ago one of our correspondents wrote of growing it in a suspended pot, and as the stems are naturally of a recumbent habit, they hung over the pot on all sides, completely hiding it with foliage and flowers. Our native species, *Lithospermum canescens* and *L. hirtum*, are not often grown, but the first has handsome hoary leaves and deep yellow flowers in May. *L. hirtum* is also a useful plant either on the front border or in the rockery, as it makes a low growth and bears abundant racemes of deep chrome-yellow flowers. Both plants have large thick roots, and yet they seem to bear removal very well.

Cultural Department.

Notes on Trees and Shrubs.

THE latter part of June is the season in New England when the characteristics which separate the two hardy American species of *Catalpa*, or Indian Bean, are most readily observed. Generally, a good deal of difficulty is experienced in attempting to tell the difference between the old *C. bignonioides* or *C. syringifolia*, or *C. Catalpa*, according to the revised nomenclature of Professor Sargent's *Silva of North America*, and the more recently distinguished and described *Catalpa speciosa*, which is now preferably planted on account of its more hardy character and finer proportions as a timber

and shade tree. Young trees of both species, seen now in this region, may be instantly distinguished by the flowering. *C. speciosa* has been in flower for the past two or three weeks, and now (June 30) about the last of the flowers are falling. The nearly pure white corollas are more than two inches across and quite two inches from the end of the lip to the base of the tube. The bottom of the tube and its entrance are strongly marked with two bands of yellow blotches and numerous small purplish dots and lines. The calyx-lobes are of a rich purplish-red color. The flowers are produced in large, loose few-flowered panicles, and they have a delicate sweet odor.

Although these blossoms are now fading away the flower-buds of the better-known *Catalpa Catalpa* are yet quite small and are not likely to expand for two weeks yet, so that it may be said there is a month's difference in the time of first flowering of the trees. The flowers of *C. Catalpa* are smaller, much more numerous and crowded in the panicle, and the panicles are smaller than those of *C. speciosa*. Both species are well worth planting as ornamental flowering trees, aside from their value for shade or other purposes. They begin to blossom freely when not more than eight or ten years old from seed and bear flowers annually afterward.

Outside of the flowers, other less marked specific differences are found in the generally smaller size of the leaves of *C. Catalpa* and their peculiar disagreeable odor when bruised, whereas there is little or none of this odor in the leaves of *C. speciosa*. The bean-like pods, too, of *C. speciosa* average longer than those of *C. Catalpa*, often being eighteen or twenty inches long. The most important point of interest to northern cultivators of these trees is found in the fact that *C. speciosa* is much the hardier of the two species. Growing side by side in the Arboretum during the past eight years, *C. speciosa* has, without exception, been alive to the tips of its branches at the end of every winter, while the longer-known species has been more or less killed each year. This applies to young plants particularly, for, as the trees get older, they become well established and seem perfectly hardy. In some situations even in this climate they may not show any unusual lack of hardiness when young. Something also depends on the locality whence the seed is procured. That *C. Catalpa* is hardy here is proved by the fine specimens to be seen about Boston.

Compared with many other kinds of deciduous trees, the *Catalpas* may be considered as fast growers. A group of eight trees of *Catalpa speciosa* which were planted on a gravelly hill-side averaged about five feet high when they were set out in the spring of 1886. They have been allowed to branch out at four or five feet from the ground, and now have trunks eight or ten inches, or in one specimen a foot, in diameter, and average nearly twenty-five feet high. An equal number of the less hardy species planted at the same time in the same situation, and of the same size when set out, can hardly be compared with the *C. speciosa*, as all but two of the original plants have been replaced by others, and the remaining plants have a diseased and stunted appearance on account of frequent and severe injury in winter. During most of the time since these trees were set out grass or hay has been allowed to grow about them. The soil not being rich, the trees were originally planted in specially prepared holes filled with good soil in order that they might have a good start.

Catalpa ovata, better known as *C. Kämpferi*, a Chinese species, comes into blossom as the flowers of *C. speciosa* are falling away, so that it fills the gap between the extremes of flowering of our native species. Its flowers are small, expanding scarcely more than an inch across, and are numerous produced in rather small compact panicles. These flowers are of a distinctly pale yellow color, marked by the two orange-colored bands characteristic of *Catalpa* flowers, and heavily spotted with purplish-black dots and lines around the mouth and interior of the tube. While they are interesting they are not nearly so handsome as the much larger and almost pure white blossoms of our native species. In winter, *C. ovata* may be readily distinguished from its American congeners by the much smaller, more slender and much more numerous pods which hang on the branches. It is a slower-growing and smaller tree than our species.

Catalpas may be very easily raised from seeds, which, if not allowed to become too dry after ripening, will germinate readily within three or four weeks after planting. They should have a very slight covering of soil, and will soon germinate when lying on top of the ground if it is kept moist and shaded. The cotyledons, or seed-leaves, are very deeply divided, so that as they expand the little plantlet, at first sight, seems to have four rounded or obovate leaves.

Arnold Arboretum.

J. G. Jack.

Fertilizers for Orchards and Vineyards.

NITROGEN is the element of plant-food which fruit-growers are cautious about giving to their trees. It has been observed that fruit-trees growing in rich enclosures about country houses and in old family gardens often lose their fruit-buds for the apparent reason that their wood-growth is tender, while trees on land which contains less nitrogenous matter grow more slowly and ripen their wood more perfectly. This is the reason why the advice is so often given to dress orchards and vineyards with phosphoric acid and potash alone. Wood-ashes and bone-dust have been considered the most suitable mixtures for fruit-trees, although the German salts are, no doubt, quite as useful for furnishing potash, and even the rock phosphates make a fair substitute for bone, since they do not leach out of the soil, and what the trees or vines do not get one year they can use afterward.

But, after all, nitrogen is an essential to all plant-growth. The leaves which fall from the trees, the clippings from the vines, the weeds that are turned over in cultivation, all add considerable nitrogen to the soil. Sometimes, however, this will not suffice, and Mr. J. H. Hale, who is one of the most careful and intelligent fruit-growers in the country, lately wrote that he had spread broadcast two tons of nitrate of soda over a peach-orchard of twenty-two acres, and that in less than a week a tremendous growth began and the foliage looked much darker and richer. Now, of course, enough nitrogen to keep up such a growth during the year might carry the trees into winter with unripened wood and tender buds, but the condition of this orchard was peculiar. It was on light, sandy soil that had an abundance of potash and phosphoric acid, and had heretofore been cultivated in the early part of the season until the first of August, when the trees were allowed to ripen their wood. The land was so poor, however, that few weeds or other green material grew after the cultivation had ceased, so that there was little nitrogenous matter to turn under in the spring. The orchard has borne several crops of admirable fruit, but for two years past the new wood-growth has not seemed sufficient. Under these circumstances Mr. Hale made his application of nitrogen. The trees are carrying now only a moderate crop of fruit, but this, too, has been stimulated to a remarkable growth, so that it is now one-third larger than any fruit which has ever been seen on Mr. Hale's place at this season.

There can be no doubt that the application of some nitrogen under these circumstances was advisable. The only question is as to the amount and the time of application. It would naturally be supposed that early spring was the time for using nitrate of soda, which is very soluble and which can be taken up by the roots of the trees as soon as they begin to work. Perhaps a smaller amount would have answered the purpose. Of course, where farm-yard manure is available no extra nitrogen supplies would ever be needed in orchard or vineyard, but the result of this treatment upon Mr. Hale's trees will be looked forward to with interest by all those who try to use fertilizers intelligently.

New Haven, Conn.

S.

Forming the Heads of Fruit-trees.

I HAVE just read a statement to the effect that a fruit-tree properly pruned when planted out will need no further pruning to form a satisfactory head. I am tempted to suspect that the propounder of this idea has just been putting out his first orchard. In forty-odd years of nursery and orchard work, I have never yet been able to formulate any hard-and-fast rule as to pruning fruit-trees, even of a single species or variety. In tree-surgery, as in the practice of the profession upon human subjects, I have felt compelled to study each case by itself. In a large orchard of many varieties and species one will find, as time wears on, that there is an individuality which demands respect, even in trees of the same variety—dependent upon soil, climate and exposure as regards the winds, the slope of ground, and a number of other points that will arise as the work goes on.

Certainly, if we consider the small size of an ordinary nursery tree, we can at once see that when allowance is made for the necessary bare trunk there is far from being sufficient space left to form the necessary head. In a short time this space, as it exists, would be demanded by the diameter of one or two limbs of a medium-sized tree, especially in the case of Apples and Pears. In my own practice I do not consider that ultimate size and distance at all. I prune with the view of giving sufficient light and air to the tree as it is, using some judgment and foresight, of course; but well knowing that we cannot foresee with much exactness all that the tree will re-

quire as it increases its size. Though well along in the last decade of my legitimate three-score and ten, I am now forming the heads of orchards of Apples, Pears and Plums set within the past six years. Visitors, and I have a goodly number of them nearly every day, remark upon the unusual uniformity of the whole orchard. In older orchards of mine—some of which were set immediately after the close of the war—the same uniformity is noted and commented on, yet the whole work of training these trees has been empirical, and I am still unable to discover a better way. A very able member of my profession has said, "There are now no more diseases; there are only cases"; and I find this rule to apply excellently in my orchards. I treat every variety and each single tree by itself, and yet by due care I am able to impress upon whole orchards a sort of uniformity with variety by my adherence to the leading principle—which is, to gradually form a symmetrical open head by moderate yearly pruning and disbudding.

One of the greatest hindrances in accomplishing this is found in the influence of the south-west winds of summer, which tend to press all the new growth over to the north-east and cause it to become fixed in that direction, by the "splinting" effect of the new wood upon the old, as it becomes firmer. This "set" cannot be entirely overcome; yet the spring pruning, rightly conducted, reduces it to such a degree as to excite comment upon the erect growth of my orchards. The pruning of young trees in spring for this purpose is pretty severe; but as every tree is visited weekly during the growing season, there is not time for much of a "set" to take place. A photograph of my orchards would show this erectness in a striking way, as compared with other orchards not so carefully treated. Perhaps one additional reason is that I plant all my orchards north and south in the rows twice as close as they are to remain. As most of my varieties are early bearers, with the rather dwarf growth characteristic of Russian fruit-trees, and of most of our native ironclads, I not only get this mutual protection for my young trees from the full force of the summer winds, but also get a great deal of fine marketable fruit during the six to ten years before the thinning-out process becomes necessary. I may add that I choose a northerly slope for all my orchards; and they are tilled and cropped with Beans and Strawberries until in full bearing. Besides this, Currants and Gooseberries are planted between the trees in the rows with great success, yielding crops even better than when planted in full sunshine. Following this plan, my orchards begin to give a profit from the start; first, beans, then strawberries, then currants and gooseberries, and finally apples. Manure and fertilizers are applied so as to keep up an annual growth of new wood on the trees not less than fifteen inches in length. It is not until nearly twenty years after planting that the ground is wholly abandoned to the trees, and these thinned one-half, as stated above.

Newport, Vt.

T. H. Hoskins.

The Flower Garden.

AFTER the main flowering of the hardy Roses and the advent of hot weather the garden takes on new aspects, as the annuals and tender plants become more prominent. Hardy plants there are still, with flowers in abundance. The cheerful Coreopsis lights up the garden as do few other flowers, and quite pales the blooms of the yellow Chamomile, *Anthemis tinctoria*. This is also the season of the Hollyhocks, the Larkspurs and the Foxgloves, all most effective flowers, and some tall Bellflowers are showing their white or purple bells, *Platycodon* the largest of all. This is also the season of Japanese Irises, which quaintly and at the same time gloriously finish the main flowering of the genus, as they show their flamboyant beauties. If these are white there cannot be too many of them in any garden. Many of the Kämpfer Irises are handsome, but good white flowered varieties of the species are among the most beautiful and precious of all flowers. They not only wear a quaint grace and elegance in the garden, but are very charming in the house. They should be cut before the petals are unrolled and as they show signs of loosening. They open up perfectly when the stems are plunged in water. This is a flower that the florists should add to their limited list.

Other hardy flowers are worth naming, but in this hot season, when one's garden energy begins to flag, the annuals, with their profusion of bloom, are counted on for the main supply of flowers. The first Poppies are passed, and one has a chance to secure another crop from the cleared space, always a welcome opportunity in a small garden. I have said before that fall-sown annual Poppies will give a crop of enjoyable flowers while the leaves of the early-flowering bulbs are maturing,

and at present such a bed waits for its third set of plants. These will probably be Cosmos for fall flowers. Cosmos, beautiful in foliage and flowers, seems to be an accommodating plant which can be topped or layered; it takes root wherever it touches the ground. As it is naturally tall-growing and often needs late protection, it seems to be worth while to try pegging it down. A bed well covered with these finely cut leaves and graceful flowers at a moderate height should prove effective. Sweet Peas are, of course, in full beauty and fragrance. I am trying this year Emily Henderson, Blanche Ferry, Mrs. Gladstone, Countess of Radnor, Orange Prince, Apple Blossom, Senator, Mrs. Eckford, Delight and a few others. I rate them in the order named. Emily Henderson leaves nothing to be desired as a pure white flower of good size and substance and is most prolific. Its white is as pure as that of the white perennial pea. Blanche Ferry is well known as a most beautiful and valuable pink. Mrs. Gladstone is a salmon-pink, very delicate and pleasing, and Radnor an equally satisfactory lavender. I fail to discover any satisfactory primrose color in Mrs. Eckford, the latest offering in this approach to yellow. The darker flowers interest me little, and I find that while some of the bluish ones, especially those which, like Lottie Eckford, have bluish tints on white, are charming when first plucked, they soon become degraded in color. The culture of these always charming flowers offers few difficulties if one can arrange to have the flowers promptly plucked.

The fall and self-sown annuals, such as Calliopsis, Nicotiana, Centaurea affinis, Chrysanthemum, Myconis, Poppies and Argemone, come into flower earlier, and are stronger than those which have been sown under cover in the early spring. It is strange how long some of the hardy annuals will linger in a garden. I found a few plants the other day of Baby's-breath, Gysophila muralis, a delicate little plant which I do not remember to have seen for two or three years, and of which seeds have certainly not been sown for twice that time. The fashionable Ragged Sailors, Centaurea Cyanus, is a much too prolific and weedy subject in a small garden, but they furnish great quantities of flowers. Sweet Sultan, C. suaveolens, is a much handsomer Centaurea, and its bright flowers, with large smooth ovaries and thread-like petals, are among the most distinct and satisfactory annuals now in flower.

Elizabeth, N. J.

J. N. Gerard.

Gooseberries.—The greatly increased demand for this fruit is even more noticeable this year than it was during the two previous seasons, and it is of growing importance that we should be able to raise fine gooseberries without mildew or other loss. I have for the last ten years had no trouble either with the native or the foreign varieties of this fruit. Formerly I was much troubled with mildew. My plan now is to grow on high well-drained soil, in rows running north and south, and well open to the sun. There is no danger from shade if the land be open and well drained. The plants should be in rows, easily cultivated with a horse, and the soil often stirred in the spring. I do not think it pays us to grow the natives like Downing and Houghton and Smith, so long as we can just as well grow the larger sorts. Industry has never done well with me, but others report that it is prolific. Crown Bob and Whitesmith are two of the best of foreign parentage. But better yet is an old sort we have had for sixty years, and known only as the "Irish Gooseberry." The earliest and richest I have is a wilding, which resembles the foreign sorts in bush, but has a fruit like Houghton in color, but much lighter red. It bears abundantly, and is ripe about the 1st of July. It is evidently a cross between the foreign and native species. Columbus and Red Jacket, I think, are emphatically valuable introductions. There is room for a new race of cross-bred Gooseberries.

Clinton, N. Y.

E. P. P.

Correspondence.

Bulbous Plants in North Carolina.

To the Editor of GARDEN AND FOREST:

Sir,—We are having now (June 29th) superb flowers of Gladiolus from seed sown in April of last year. The spikes are strong and full as any of those from large old corms. These seedlings (Gandavensis hybrids) were left in the ground all winter, and grew off and began blooming earlier than the old corms that were lifted last fall. Late April seems rather too late for sowing Gladiolus seed in this latitude, as many of the young seedlings were cut off by hot weather in May. Sown here early in March, almost every seedling will reach a

blooming size. The seedlings left in the ground last fall were well up by the middle of March, and had seasonable weather to get strong before the hot weather began. Old corms of Gladiolus continue to grow here much later than I have ever seen them grow in Maryland, and the consequence is that many of the offsets, besides the main ones at the top of old corms, get large enough to bloom. Last spring I selected six good-sized corms in order to note their natural increase. All were lifted, separated and replanted this spring. I have just counted forty-six that are blooming, or certain to bloom, while the whole number that will flower next year will be over a hundred. When Gladioli increase in this way, and grow with certainty to a blooming size in one season, why should not our people enter the lists for the production of these plants for market?

In Roman Hyacinths, Ascension Lilies, Narcissi, and early Tulips we can show equally good results, and if we could only persuade market-growers to make a fair trial here we believe that in a short time we could supply most of the bulbs now imported for forcing, as we have done in the case of the Tuberose. While the Polyanthus Narcissus in all varieties are hardy here, when properly treated, we find it necessary to treat them differently from other classes. If planted in autumn they at once make such strong top-growth that when freezing weather comes they are apt to be seriously injured. But if the planting is deferred until late December or early January no such trouble is experienced. Narcissus dubius or Paper White is particularly liable to injury if planted too early. In the ripening of these fall-planted bulbs our long spring season is a great advantage, as they have a cool growing season from January until May before the sun gets hot enough to hasten their ripening. They therefore attain a full development of bulb, and Roman Hyacinths, which bloom with us in the open air from Christmas to March, make bulbs of a size I have never seen equaled in any of the lots sold by seedsmen. We are making arrangements to have some Lilies grown in the deep peaty soils of the counties bordering on our sounds. This section, where the soil is a mass of decomposed vegetation of unknown depth, ought to be the ideal place for Lily-growing. These lands are found in the counties of Onslow, Hyde, Tyrrell, Dare and some others, and more fertile soils do not exist, while the climate is much milder than it is here.

Raleigh, N. C.

W. F. Massey.

Our Native Persimmons.

To the Editor of GARDEN AND FOREST:

Sir,—Almost three-score years ago I drove twelve miles to get a half-bushel of small persimmons. I took them home hard and green, and under exposure to frost and sunshine they ripened. During all these years this fruit has interested me, and for three years past, when all our other fruits have been failing, the persimmon interests me still more deeply. They never fail, and by selecting the best varieties from early to late we can have them fresh for six months in the year, and when properly dried they are not to be despised during the remaining six months. That the persimmon is an astringent fruit only fit for opossums and raccoons is a great mistake; that they are not good until touched by severe frosts is another mistake. I have two varieties that begin to ripen in August, and are nearly gone by the time severe frosts occur. I have others that hang on the trees in a dry winter until March. Although I have been a nurseryman for fifty years I have not yet learned to grow young trees successfully, and, therefore, have no trees to sell, but can furnish grafts at the proper season at moderate prices. My only success has been in crown-grafting. But recently the owner of trees which bear the largest fruit I have yet seen has hit upon a plan of spring-budding which has proved successful, and in this way stock may probably be grown to meet the increasing demand for trees.

I have seen groves of a hundred trees in fruit without an individual tree worth growing. Ten years ago I offered \$5.00 for the best persimmon, and fruits came from all quarters—one from St. Thomas, Cole County, Missouri, and I now have a tree grafted with this variety which bears bushels every year. Seedling-trees which spring up on my place are left until they fruit. If the fruit is superior I have a good variety, if not I graft the tree with something better. I have now eight varieties, all of which I consider worth having.

Early Golden came from E. A. Riehl, Alton, Illinois. It commences to ripen in the latter part of August here, is a rich golden yellow, with few seeds and of excellent quality. It bears well and regularly.

Kansas Seedless is the name of another, but it is not seedless altogether. Some fruits have but a single seed, and some

small ones no seed at all. It ripens with the first named, is yellow, of excellent quality, and bears abundantly.

Josephine. This I discovered on the edge of the river-bank a few miles from here, and now have a fine tree from grafts. It also commences to ripen before frost, and is of superior quality, but has plenty of seed. I have measured specimens of this variety two inches in diameter.

St. Thomas. This ripens after frosts, and the fruit dries on the tree, so that a peck was gathered from it in March the following year, when the cedar-birds commenced to eat them. The fruit must be fully ripe before it loses its astringency, then it is delicious.

Marion. This variety bears the largest fruit of any in my collection, and has but few seeds. Out of eleven fruits I counted but fifteen seeds. The quality is not quite so high as that of some others, but its large size and few seeds make it valuable. J. H. Marion, of Fulton, Callaway County, Missouri, is its originator, and he is propagating it, I understand. This variety needs frost to ripen it.

Ruby. This is a seedling, and the fruit, although small, is so handsome and the foliage is so abundant that it is worth planting. The fruit hangs on all winter.

Of seedlings raised about one-half will be barren, but the sex of the tree can be distinguished at its first blossoming. The fertile flower is not very beautiful, but that of the barren tree is something of the form of Lily-of-the-valley, and is very sweet.

Bluffton, Mo.

S. Miller.

Woodlands of New England.

To the Editor of GARDEN AND FOREST:

Sir,—I have more than once stated that I cannot but regard the impression erroneous that northern New England is being rapidly divested of its forests, and is liable, therefore, to become a dry and barren waste. After a residence of nearly thirty years in northern Vermont, with occasional trips through various portions of the upper Connecticut valley and north-eastern Maine, I still find ample grounds to sustain my belief that while trees valuable for timber in the more accessible parts along the water-courses have been considerably thinned out, and that the cut, as now shown by the annual "drives" down the Connecticut, the Kennebec and the Penobscot rivers, is made up mainly of a considerably smaller growth than those which were familiar to me as a native resident of the Kennebec valley between 1828 and 1849, yet the actual extent of these great forests, and their present value as a source of future supply, is very slightly impaired.

Aside from the great timber-forests, there was a time between 1850 and 1870 when the woodlands along the lines of railroads were being rapidly denuded of their smaller tree-growth for locomotive fuel and for charcoal. But this ceased almost at once when mineral coal and coke were found to be cheaper and better for nearly all uses. A recent and somewhat extended trip through such forest-territory really astonished me when I noted how rapidly all of it had been again covered with a thrifty growth, which has filled all gaps, and is, in fact, encroaching to a considerable extent upon once cultivated fields.

Some persons who have read my statements on this subject have rather hastily assumed that I hold the belief that a let-alone policy is all that is required in this matter. That is a mistake. I well understand that forests, like farms, may deteriorate; and will deteriorate of necessity without intelligent care. As a farmer, and as a writer for the press, I have been always urgent for sound teaching in our agricultural colleges upon all subjects connected with woodlands as well as plowlands. I have looked for such institutions to furnish us with men capable of rightly caring for and managing all landed property. But I think many readers who criticise me are unaware of the fact that our great owners of forest-lands—perhaps I should say timber-lands—are not all ignorant regarding their interests in this particular. Such men are in many ways careful of those interests, and have their rules as to systematic cutting, as well as to the prevention of damage by fire. If really competent foresters were to be had—men who fully understand our American forests and their conditions—I believe that supervisory work would be ready for them. There is an immense amount of money invested in New England woodlands; and owners are far from being indifferent in regard to their management and preservation. But as yet expert foresters, who understand American needs and conditions, are very few in number.

Newport, Vt.

T. H. Hoskins.

Recent Publications.

With the Wild Flowers. By E. M. Hardinge. New York: Baker & Taylor Co.

This little book is another attempt to bring before young people some of the elementary facts of botany and to explain some of the intricacies of vegetable structure in familiar language. Of course, it is not possible to go very profoundly into the science of botany or any other science, in fact, without the use of technical terms, and most efforts of this kind must fail in point of clearness and accuracy. It is a mistake to suppose that people who are really desirous of learning anything have minds so sluggish that they cannot acquire the language of that science as fast as it is needed. Mr. Hardinge asserts in his preface that such words as "dicotyledons," "angiosperms" and "polypetalous" "excite loathing" in the pupil. But this is an exaggerated statement. Whenever the necessity arises for inviting attention to an object or a process there is need of a word to describe the thing or the action, and while it is true that language ought always to be plain and easily understood, and that it is foolish to use words beyond a pupil's intelligence, nevertheless it is always indispensable that his knowledge of scientific terms should keep pace with his knowledge of scientific facts. Scientific language properly used is never a hindrance and always a help, and one who is apt to teach can make the study of the words and phrases which it is necessary to employ quite as interesting as the study of the plants the student is investigating.

The separate chapters of this book are not logically connected, but they treat of different subjects which are suggested as the season advances. Indeed, the matter contained in the book has appeared before in the form of contributions to different periodicals, and this will account for its lack of system. This is no objection, however, to a book of this character, the chief value of which is to arrest attention and to excite in the young reader an interest in plants and prompt him to examine them for himself. No one can acquire any considerable knowledge of botany by reading what some one else has written about it. Whenever a boy or a girl begins seriously to examine plants and their structure, to compare them, to mark their points of similarity and difference, he has entered the path which will ultimately lead, if he continues to walk in it, to a knowledge which is genuine and scientific so far as it goes. The subjects of the book are well chosen to arouse such an interest, and although it is written in a style that is rather too intense for the subject, it is a good book to give to bright young people to read during their summer vacation. The illustrations are better than those of most other books of its class.

Glimpses of the Plant World. By Fanny D. Bergen. Fully illustrated. Ginn & Co., Boston.

Miss Bergen's book is somewhat less ambitious than the one noticed above. She talks to children about the beauty of early awakening nature, the charm of wild flowers, and adds a little about plants of low degree, such as the Mushrooms, the Yeast Plants, the Sea-weeds, the Ferns. Then the structure of the flowers and their seed-bearing are explained in a familiar way easy of comprehension to a small child, and yet accurately and practically. The descriptions are illustrated plentifully with well-drawn pictures. Books of this character, although not strictly scientific in method, have a genuine value, so long as their statements are accurate, since they tend to give an impulse to a child's life which may develop into an ardent love for nature, and this in maturer years will help to brighten life with one of its purest and most satisfying pleasures.

Notes.

Two-tenths of an inch only of rain, precipitated in one short thunder-shower, fell in the neighborhood of Boston during the month of June. This is probably the smallest recorded rain-

fall for the month in that region, where the average is rather more than four inches.

Parts 103, 104 and 105 of Engler & Prantl's *Die Natürlichen Pflanzenfamilien* have just reached us. They contain the completion of the Leguminosæ, by Taubert; an instalment of Compositæ, by Hoffmann; Begoniaceæ and Datisceæ, by Warburg, and Cactaceæ, by Schumann.

The great logs and tree-trunks of which the Washington State Building, on the Chicago Fair Grounds, was composed, were recently loaded on a schooner which was to take them from Chicago to a French port, the intention being to re-erect the structure in that country. Some of the logs are 140 feet in length.

A friend of Harvard University, whose name is withheld, recently gave \$10,000 to its Botanical Department for immediate expenditure. One-quarter of the sum will be used for the Gray Herbarium, while one-quarter will be devoted to the Botanic Garden, and the remaining half to the Botanical Museum for the completion of some of its collections.

The tomb of Alphand, the landscape-gardener who so greatly beautified Paris and secured the artistic success of her International Exposition, has just been completed in the cemetery of Père-Lachaise. It consists of a pyramidal structure ten feet in height, upon one side of which is a bronze bust of Alphand, by Dalou, one of the most famous of modern sculptors.

The Pennsylvania Society of the Sons of the Revolution has already marked, in an appropriate way, General Wayne's old headquarters at Centreville and Fort Washington, and has placed commemorative boulders at Valley Forge and at Washington's encampment-place at Gulph Mills. This year it expects to dedicate another votive stone at Queen's Lane, in Fairmount Park, a spot upon which Washington twice encamped.

Mr. Frederick McMonnies, the sculptor of the great fountain at the Chicago Fair, has just returned to Paris, charged with important commissions for the adornment of the approaches to Prospect Park, in Brooklyn. He is to design a great quadriga for the top of the Soldiers' Memorial Arch at the main entrance, and two large groups for the pedestals against its face; and also two groups of men and horses for the isolated pedestals which form part of the elaborate gateway built by Messrs. McKim, Mead & White, at the boulevard entrance toward the south-eastern extremity of the park.

It is now universally understood that the proper thinning out of fruit will help to give a greater quantity and much better quality, and that it is not only good practice for market-growers, whose profits depend on good, evenly graded fruit, but that it pays from every point of view in private orchards. One advantage of thinning not generally taken into account is explained by Professor Taft in the current number of *The American Agriculturist*. A tree which is allowed to ripen too great a number of fruits will be weakened, so that it will not be able to mature fruit-buds for next year's crop, and the tree will then waste half its time in recovering. The flesh of the fruit is largely water, it is true, but these seeds contain much mineral matter, and when we remember that a bushel of peaches from trees in which the fruit has not been thinned contains three times the number of pits which a bushel does from the thinned trees we can see what a draft this makes, both upon the soil and upon the tree, and how it helps to account for the irregular bearing and the premature exhausting of orchards. Peaches, Plums and other stone-fruit trees are particularly liable to injury from excessive bearing, but other fruit-trees are injured in the same way, although to a less extent.

We are glad to announce the appearance, after a long delay, of another part, the eleventh, of Mr. Hemsley's "Enumeration of Chinese Plants," published in the *Journal of the Linnean Society*. The present instalment of this important work completes the Thymelæaceæ and embraces the Elæagnaceæ, Lorantheæ, Santalaceæ, Balanophoreæ, Euphorbiaceæ, and the Urticaceæ through Ulmeæ, Celtidæ, Cannabineæ into Morææ. Like the earlier parts, the present issue only confirms the reader's idea of the richness of the Chinese flora, especially in woody plants, and reminds him that western China still contains many trees and shrubs that are unrepresented in our gardens. Among the novelties here first described, which may be expected to flourish in this country, are *Ulmus castaneifolia*, a tree said to be fifty feet in height, with narrow Chestnut-like leaves, found by Henry in Hupeh and

Szechuen; *Celtis nervosa*, from Formosa, and *Morus Cathayana*, from Hupeh, a species said to resemble the Indian *Morus lævigata*, from which it is distinguished by its relative short flower-spikes borne on short peduncles. Other trees included in this issue, which are still to be introduced into cultivation, although previously known to botanists, are *Ulmus Davidiana*, discovered by the Abbé David at Jehol; *U. macrocarpa*, which Mr. Hemsley surmises is not distinct from the last; *Zelkova Davidii*, a tree that is apparently not rare in the vicinity of Peking and at Jehol, and which has also been discovered in Corea; *Celtis Bungeana*, from Peking, and *Pteroceltis Tatarinowii*, a *Celtis*-like tree, of western China.

The railroad strike, which has practically put a stop to freight traffic between the Atlantic and the Pacific coasts, has brought about some strange conditions in the fruit market here. Two car-loads of California fruit, belonging to the Earl Fruit Company, by some good fortune reached this city on Monday in fair condition, and since it is not probable that any more California fruit will arrive for a month, the prices brought were unusually high. Plums sold for as much as \$3.00 a box and upward; apricots, which a few days ago sold for seventy and eighty cents a box, went up to \$3.05; peaches brought \$3.30 a basket; Bartlett pears brought \$4.75 a box, while Seckel pears brought \$5.00, and a few Red Astrachan apples sold at the rate of \$17.00 a barrel. Naturally, the stoppage of so large a source of supply as the California orchards has strengthened the prices of all local fruits like cherries, raspberries and watermelons, as well as the few oranges and pineapples which are now coming into this port. Bananas, too, are considerably higher, while lemons, on account of the falling off of the demand in the west, are piling up here and are becoming a drug in the market. The fruit-growers of California, especially those who depend on early fruits, must sustain very heavy losses. In such places as Vacaville telegraphic advices say that tons of early fruit are being dried or canned, as no fruit trains have started from that point for more than a week. Arrangements are not adequate, however, for drying all the fruit produced, and many of the canneries can get no sugar, so that much of it has already been wasted. At this time, in an ordinary season, 250 car-loads of fruit leave San José alone for the east every day, and it is impossible to can or dry this enormous quantity, so that if the blockade continues long enormous quantities of fruit will be sacrificed.

In Bulletin 67, just issued by the Cornell Agricultural Experiment Station, Professor Bailey gives some account of several garden vegetables which have been introduced into this country by the Chinese. The most valuable for American gardens is the so-called Chinese Cabbage, Pe-Tsai. It is a plant with a loose, lettuce-like head of crisp leaves, which may be used in all the ways in which cabbage is served. It is an autumn vegetable, and requires a cool moist soil. The same cultivation and attention is demanded for the Chinese Mustard, which is an excellent plant for greens, and produces an enormous amount of herbage. California Pepper Grass, which was brought prominently into notice by John Lewis Childs in 1890, seems to be a finely cut leaved form of a Mustard which has been long known in old gardens in this country, but has not been described either in American botanies or gardening books. It is one of the best of all plants for early spring greens. It is not known how or when the plant first came to this country, for, although it is cultivated in China and Japan, it does not appear to have been independently introduced from either of these countries in recent years. There are other Mustard-like plants which have been introduced from China which possess less merit than the foregoing species for American gardens. Among them are the Pak-Choi, used as greens and for the thick white leaf-stalk; and the tuberous-rooted Mustard, grown for its small turnip-like root. Of the cucurbitaceous plants introduced by the Chinese the best is the Wax Gourd, Zit-kwa, the fruit of which is excellent for preserves. It is easily cultivated, but requires a long season. The La-kwa, or *Momordica Charantia*, is not new to the American city trade, but has more merit as a curiosity and an ornamental vine than as an esculent for our taste. The Luffas, or Dish-cloth Gourds, are of two species, which differ chiefly in the contour of their fruits. The one best known has ribless cylindrical fruits, but the one chiefly cultivated by the Chinese in the neighborhood of New York has club-shaped ribbed fruit. These fruits are chiefly interesting because they yield a sponge-like fibre which is useful for household purposes. The Tau-kok is a Bean of some merit for late home use, but the Chinese Pea has little to recommend it, and the other vegetables named have hardly any value for our gardens.

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The Use of Color in Our Parks.

NOT long ago it was stated in an article in *Gartenflora* that the tendency of garden art in our eastern states is to "banish all pattern-beds, and, to a great degree, even flowers and bright-hued foliage-plants" from our public parks. This is undoubtedly correct as to pattern-beds, if we are to understand by the term such eccentricities in design as those created by the German artist who decorates the landscape in Washington Park, Chicago. But if we are to understand by pattern-beds all formal arrangements, we apprehend the statement is too sweeping. It is pleasant to observe, even in our private pleasure-grounds, a tendency to more quiet treatment, although there are still some excesses in the way of conventional floral effects, but we are afraid that there is no immediate prospect that even carpet-bedding of the most conspicuous sort will be altogether dispensed with. Some of our public pleasure-grounds, like the Boston Public Garden, are still spotted with too many beds of violent color, and there is little fear that the taste for naturalistic effect will become so strong that it will not tolerate formal planting in places where such planting is desirable. If there are comparatively few pattern-beds in the great public parks of our eastern states, it is owing to the fact that much the greater part of our park area is naturalistic in design, and, therefore, affords few appropriate places for formal features. Wherever the treatment is semi-architectural, as, for example, on the terrace in Prospect Park, in Brooklyn, formal arrangements of flowers are often effectively employed. Where natural elements predominate, and architectural elements are subordinate, as is the rule in our public parks, formal gardening is out of place; but in private grounds these conditions are often reversed, and in such cases, so far as we have observed, there is no attempt made on the part of architects or landscape-gardeners, either in theory or practice, to banish formal gardening arrangements.

It is quite easy for one who has an absorbing admiration for pattern-gardens to have no affection for, or appreciation of, flowers for their own sake. It is the picture which is admired—the flag or the calendar or the map of the

world—and not the individual flowers which compose it. Indeed, when flowers of a given color are lacking it is a common practice of Chicago artists to use stones and shells or bits of glass to supply the proper tint. Opposition to designs of this sort, therefore, does not imply any objection to flowers. The suggestion that there is a tendency to banish flowers from our pleasure-grounds would never occur to one who has noted the wonderful wealth of trees and shrubs with showy flowers which our parks contain. Our country is unusually rich in plants of this sort, and they are the special glory of many parks. Such natural wood borders as those found in Druid Hill Park, Baltimore, and in Prospect Park, Brooklyn, are brilliant with color in spring and early summer, and so are the artificial plantations in Central Park. No display of pattern-beds could be as gorgeous as the masses of *Rhododendron*-flowers which unfold themselves every spring in the ravine at the northern end of Central Park; no panorama could be more brilliant in color than its drives and walks when the *Forsythias*, *Amelanchiers*, *Japan Quinces*, *Spiræas*, *Dogwoods*, *Judas-trees*, *Paulownias*, *Azaleas*, *Catalpas* and many more succeed each other in bloom; and the magnificent richness of color which flowering shrubs can present is the delight and marvel of all who see the small parks and gardens of Washington in spring and early summer.

These floral displays are transitory, it is true, but one follows another so closely that no season lacks beauty of color, and it may be said that even pattern-beds are but short-lived in our climate. The plants do not well cover the soil until July, and they perish with the first touch of frost, so that, except for this short intermediate season, these raw beds are blotches on the face of nature, while a fine tree or shrub is beautiful, not only when in bloom, but throughout the season, and even when winter has robbed it of its foliage. Nor are flowering herbaceous plants neglected, as every one knows who has seen the *Water-lilies* in Central Park or the plantations at the head of the Mall, or the profusion of more modest flowers which are scattered throughout its groves and glades and amid the grass of its lawns. The tendency, too, is to introduce more wild flowers, which, though inconspicuous in themselves, form great masses of color, associated with turf and shrubbery, as nature dictates; while every year the shrub-borders in all our parks grow brighter with the increased use of hardy perennial herbs.

The statement that there is a tendency in the eastern states to "banish bright-hued foliage-plants" from the parks is, we are glad to say, more strictly accurate. Small-sized plants with leaves of abnormal color are sometimes useful in formal arrangements, but it is a gratifying fact that the employment of shrubs and trees with yellow, reddish white, streaked or spotted leaves is less profuse here than it is in European parks. Of course, this does not mean that there is any monotony of color in our woods and shrubberies, for between the pallid grays of the *Elaeagnus* and the Lead-plant to the almost blackish tone of many Pines, there is a wide range of color through all the greens and kindred tints. But there is a radical difference between the use of flowers and the use of bright-hued foliage in producing those conspicuous color-effects, which, when properly used, are pleasing to the eye. Nature has pointed out this difference, and the artist who keeps her methods in view may mass his flowers profusely with a most beautiful result. A meadow full of *Buttercups*, masses of white *Dogwood*-flowers mingled with the coral sprays of the *Judas-tree* and the paler pink of the *Crab-apple*, banks of pink and white *Mountain Laurel*, hollows filled with the shaded crimsons and purples of *Rhododendron*-blossoms, these and a hundred other combinations offer an abundance of bright tints in large masses, which give exquisite pleasure. But in our temperate latitudes nature uses variegated foliage very sparingly. Indeed, bright-colored leaves are hardly seen at all, except for a few days when spring suddenly bursts upon us, or when, in autumn, all the woods are aflame with gorgeous tints. Even then

the display endures for a short time only, and it is more beautiful because it is fleeting.

It is true that the gardener now has at command an abundance of plants with vivid foliage which have developed under other climatic conditions, or, as is more generally the case, which have resulted from his own efforts to perpetuate chance freaks of nature, which, had she been left to herself, would never have multiplied to any appreciable extent. When, therefore, we use these plants with bright-hued foliage in the landscape-effects which we elaborate in temperate regions, we introduce novelties of our own invention. We are not carrying out nature's essential scheme, but are weaving in materials foreign to her local ideal; we are not delicately or forcibly varying the melody which she has composed, but are trying to incorporate with it alien notes and chords. And this indicates that here is a line on which we should work cautiously at least, lest nature's original plan be ruined and her original harmony become a series of discordant fragments. These considerations are vaguely felt, although the cause of them may not be thoroughly analyzed, by every person of taste who contemplates the average European park, with its abundance of pallid *Negundos*, or an American private pleasure-ground, with its masses of *Prunus Pissardi*. Many plants and trees with bright-hued foliage are charming in themselves, and ungrudgingly admired when seen in small numbers and in appropriate situations. That they seem out of harmony with their surroundings when profusely employed in naturalistic landscape is owing to the fact that in our part of the world nature grows brilliant flowers in great abundance, but is niggardly in the production of bright-hued leaves, and that to attain artistic and satisfying results we must always follow the broad lines which nature lays down.

Again, the unchanging character of bright-hued foliage-plants is an argument against their abundant use. Flowers are transitory. Plants which bloom all the season produce flowers sparingly at any one time, and those which bloom profusely relapse into quiet greenness after a few days of splendor. Therefore we do not grow tired of the most gorgeous color combinations which are wrought with blossoming trees and shrubs, nor have we time to weary of the tender tints of opening leaves in spring, or the crimson and golden glories of our autumn foliage. But the vivid and variegated plants which are so much affected by French park-makers and by American amateurs are the same from one end of the season to the other. No matter how much we may admire the magnificence of an October forest, we should tire of such a forest if it were before our eyes from May to November; no matter how much we regret the fading flowers of the *Rhododendron*, we know it is better that they should fade so that we can enjoy the quiet green of their foliage for the rest of the year, and welcome their flowering season again with greater delight. We may crave the beauty of color all the year through, but we only get this beauty at its full by a sequence of effects each dissimilar to all the rest, and, therefore, we have no regrets at a tendency to exclude from our parks so-called foliage-plants with their monotony of odd color so long as we have a profusion of flowering plants which show as the seasons move the constantly renewed beauty of ever-changing tints after nature's approved method.

The Gardens of the Early New England Colonists.

THE early colonists of New England were from all classes and conditions. Many were connected with families of great prosperity and affluence. It may, therefore, be rightly conjectured that a fair proportion brought with them to the New World that inherent love for horticultural pursuits, and that sensibility to natural beauties, which have marked the English as a nation, at least since the accession of Edward III.

Before the accession of Queen Elizabeth, horticulture in

Europe had been considered rather as a mechanical art, but in this reign it was destined to become enriched by establishing national gardens for the scientific cultivation of plants, thereby rendering the study of horticulture and botany more popular. This course was pursued not only in England, but also upon the Continent. The impetus thus given created a host of writers and practical observers upon all subjects pertaining to gardening, and led to the introduction of new plants from foreign countries, especially from the New World and from the Indies. Many of these, at first imported as mere novelties, were soon sought for as necessities as well as luxuries. Tobacco, tea and the potato may be thus enumerated.

Among the writers who, during the latter part of the sixteenth and during the seventeenth century, became authorities in England and have so continued, may be mentioned Didymus, Scot, Dethycke, Thomas Hill, Maschal, Platt, Heresbach, Gerarde, Markham, Parkinson, Tradescant, Evelyn, Worlidge, Sir William Temple and Lord Bacon.

It is hardly to be supposed that the earliest settlers in the plantations of Plymouth and Massachusetts Bay would pay much attention during their first years in the country to æsthetic principles in laying out their gardens, however well they might be versed in these as advanced by Parkinson, whose *Paradisus terrestris* explained the details of a garden practice adapted to the climate of New England as well as of old England, or of other writers with whose works they were doubtless more or less familiar. It was with many a contest for existence, and in the preparation of the soil for the raising of the necessities of life they found ample occupation. It is not until the middle of the seventeenth century that we find any account of gardens laid out in a manner that indicated the increased affluence of the colonists, and these were mostly in the principal centres of population.

Our knowledge of the horticultural affairs of the first planters is gleaned from a few authorities. Higginson's *New England's Plantation* was published in London in 1630, before the sailing of Winthrop's fleet. Writing in 1629, the reverend divine says: "The fertility of the soil is to be admired at, as appeareth in the abundance of grass that groweth everywhere, both very thick, very long and very high in divers places. . . . But the abundant increase of corn proves this country to be a wonderment. Thirty, forty, fifty, sixty, are ordinary here. Yea, Joseph's increase in Egypt is outstripped here with us. . . . They have tried our English corn at New Plymouth Plantation, so that all our several grains will grow here very well, and have a fitting soil for their nature. Our Governor hath store of green pease growing in his garden as good as ever I eat in England. This country aboundeth naturally with store of roots of great variety, and good to eat. Our turnips, parsnips and carrots are here both bigger and sweeter than is ordinarily to be found in England. Here are also store of pumpions, cowcubers and other things of that nature which I know not. Also divers excellent pot-herbs grow abundantly among the grass, as strawberry-leaves in all places of the country, and plenty of strawberries in their time, and pennyroyal, winter savory, sorrel, brookline, liverwort, carvel and water cresses; also leeks and onions are ordinary, and divers physical herbs. Here are also abundance of other sweet herbs, delightful to the smell, whose names we know not, and plenty of single damask roses, very sweet, and two kinds of flowers very sweet, which they say are as good to make cordage or cloth as any hemp or flax we have. Excellent vines are here up and down in the woods. Our Governor hath already planted a vineyard, with great hope of increase. Also mulberries, plums, raspberries, currants, chestnuts, filberts, walnuts, small nuts, huckleberries, and haws of whitethorn, near as good as our cherries in England, they grow in plenty here."

In Wood's *New England's Prospect* we have a true, lively and experimental description of that part of America commonly called New England. William Wood, the

author, came to these shores in 1629. He herein gives the result of his observations and experience during a residence of four years, publishing his book in London in 1635. Having spoken in the early chapters of the situation, seasons and climate, he next discourses upon "the Hearbs, Fruits, woods, water and Minerals." "The ground affords very good kitchen Gardens, for Turneps, Parsnips, Carrots, Radishes and Pumpions, Muskmillions, Isquouterquashes, Cucumbers, Onions, and whatsoever grows well in England, growes as well there, many things being better and larger. There is also growing all manner of herbes for meate and medicine, and that not onely in planted gardens but in the Woods, without eyther the art or the helpe of man, as sweet Marjoran, Purselane, Sorrell, Pinerill, Yarrow, Mirtle, Saxifarilla, Bayes, etc. There is likewise Strawberries in abundance." He devotes a chapter to a consideration of the several plantations. Among these he mentions more particularly the following:

Dorchester "has very good arable grounds, and hay ground, faire cornefields, and pleasant gardens with kitchen-gardens."

Roxberry "has faire houses, impaled corne-fields, and fruitfull gardens."

Boston, "where dwells the Governour, hath very good land, affording rich corne-fields, and fruitful gardens, having also sweete and pleasant Springs." William Blackstone, in 1625, "is cultivating a garden, and watching the growth of some apple trees on the westerly slopes of Trimountain."

"On Gov. Winthrop's island is planted an orchard and a vine-yard, with many other conveniences."

In *New-England's Rarities*, Josselyn says, "The plants in New-England for the variety, number, beauty and vertues, may stand in competition with the plants of any countrey in Europe." In the list of these which he gives, we have the fullest account of the plants which made up the collection to be found in the gardens of our remote grandmothers. These excellent dames would seem under the circumstances, to have fared well. Their English and Indian beans and peas; their various roots of excellent quality, beets, parsnips, turnips and carrots; the cabbages, asparagus, radishes and lettuce; their various and numerous pot-herbs and sweet-herbs; the Indian pumpions, melons and squashes—all testify to this belief.

Nor should those dear reminders of their childhood's home, the sweet familiar flowers, be forgotten, the White Satten, the Lavender cotton, the Gillyflowers and Hollyhocks, possibly arranged by themselves, in "a garden of Pleasure" laid out with formal paths, bordered by "swete-herbes," as Parkinson advises, and the whole surrounded by a hedge-row composed of English Roses, Eglantine, Barberries, and Privet, for the planting of which Josselyn gives full directions. The Lilacs and the Snowballs are reserved for the modest adornment of the door-yard as precious souvenirs of Old England.

Chestnut Hill, Mass.

Daniel Denison Slade.

Botanical Notes from Texas.—XXI.

WHEN the traveler, going westward on the Southern Pacific Railway, has left San Antonio about one hundred and seventy miles behind him, the brakeman's call, "Del Rio," advises him that the valley of the great river of the north, though two or three miles away, is in sight. Del Rio is a pleasant little city of about two thousand inhabitants, whose name is significant of its proximity to the river. It is built in a large and beautiful valley, from which the county, of which the city is the capital, Val Verde, is named.

The latitude of Del Rio is about twenty-nine degrees twenty minutes. The one hundred and first meridian runs just west of the city. The city of Mexico is nearly south of Del Rio, about twelve hundred miles away. El Paso is some four hundred and fifty miles farther up the river. New Orleans is about seven hundred and fifty miles nearly east.

A mile or so from the city there are several large and powerful springs of excellent water; together these springs form the San Felipe River. In its short, but very swift, course to the Rio Grande, it not only affords abundant water-power, but also

can be made to water nearly the entire valley through which it flows. If the people of Del Rio will in a liberal way improve their natural advantages they can make it a large and prosperous city, and this good work, to some extent, has been begun. Cultivated fields and orchards and vineyards abound in the valley. Wine to the amount of several thousand gallons is made annually in Del Rio, and viticulture is capable of indefinite extension here. Apples, Pears, Peaches, Apricots, Quinces and Plums are also to some extent in cultivation. All of those fruits succeed better than the Apple. With irrigation, fruits grown here are nearly independent of the clouds for their supply of water. Nature has made the soil all that is required for success. But late "Norters," after a summer-winter, such as south-western Texas is now enjoying, quite often blast fruit-growers' hopes of a crop, even when the fruit is nearly half-grown. No part of Texas, unless it be a small portion of the state near Brownsville, is exempt from those sudden extremes of cold. There seems to be no way to avoid them except for the state to throw up a range of mountains, say, a mile or two high, along its northern boundary. The occasional destruction of a fruit-crop, unless the trees, too, are injured by the cold, as they sometimes are, might, however, prove a less serious loss to the grower than to the consumer of the fruit.

The proximity of the river and the sparseness of the human population in this region afford pleasure-seekers good hunting, and sometimes plenty of game. Away from the settlements wild turkeys are still abundant. Dry weather has driven most of the quail to regions favored with more rain, and therefore with more grain-fields where they may glean. I saw a single covey of the handsome California species near the city, and the Texas Bob White is also here. The common American deer and the antelope are yet common. Here, too, the colored man may still luxuriate on his favorite opossum. The fox, raccoon, badger, lynx and three or four other species of cat, including the dreaded Mexican lion, two species of wolf, the black bear and the southern armadillo, with the fox-squirrel in abundance, inhabit this portion of the Rio Grande region.

From the summit of Round Mountain, a sedimentary hill in the lower San Felipe valley, on a clear, bright, early winter morning, a broad and pleasant field of views opens up to the visitor. He sees the San Felipe, with its beautiful valley, from its source to where it is lost in the Rio Grande; the winding valley of that river, Del Rio, the hills and mountains in the distance; and across the Rio Grande he sees scores of the thatched adobe houses in Mexico, while the peaks of San Rosa Mountains stand up against the distant sky.

To northern readers a botanical excursion on Christmas may seem untimely. But here we were on Christmas-day in south-western Texas. Some wild plant may be collected every day of almost any year. That is especially true of the present winter, in which no norther has yet visited Texas. I am writing in early February, and here at Fort Clark, even *Sophora secundiflora* shows its violet flowers, and many individuals of the *Berberis*, common to this region, are in full bloom. A little farther south of us Peach-trees are already pink with their blossoms.

On the lowlands, near Rio Grande, grow *Baccharis glutinosa* and *B. angustifolia*. All the beauty that Nature has vouchsafed to the genus *Baccharis* resides in the elongated plumose pappus of some of her species. Neither of the species mentioned is celebrated for its beauty, but at Uvalde, near the lake, I saw another species, probably *B. salicifolia*. It was in the full glory of its fruiting and was attractive and handsome. The species growing here are somewhat useful. They are tall shrubby plants, growing ten or more feet tall and becoming three to four inches in diameter. Mexicans use the slim trunks for fagots, for light fencing and for thatching. They are also useful in holding together and strengthening the banks of irrigating ditches. *B. angustifolia* is known as Cedar wherever it grows in western Texas.

There are several dams across the San Felipe to afford more water-power or to supply the irrigating ditches. In the ponds created by the dams, and everywhere in still water, *Nymphaea advena* grows in great luxuriance, and hundreds of its peculiar but homely flowers appear above the water. In both still and flowing water of the San Felipe, along whose banks we strolled, queer little *Trichocoronis rivularis* is very common. Sometimes it makes the surface of the water white with its small flowers. It is a composite and clearly amphibious in its way of living. In shallow water it roots in the soil at the bottom of the stream in which it grows. In deeper water rootlets and all float. When growing in water, which sometimes fails it, still it is not discouraged, but pushes its roots into the liman and grows equally as well there. It is a south-western species.

A tall, handsome Golden-rod, with some of its stems still in flower, grows abundantly along the river. Flowering individuals of *Bidens chrysanthemoides* are still more frequently to be seen. It is the most common Texas species of its genus. Near one of the large springs I collected flowering specimens of a rather pretty small-leaved *Eupatorium*.

Andropogon glomeratus, with its panicles browned and reddened by the wind and sun, fringes the bank of the river wherever it can gain a foothold in the soil. Sometimes it shares its space with our handsome southern Maiden-hair, *Adiantum Capillus-Veneris*. A species of *Agrostis*, and one of *Letaria*, are also common near the water, and still growing vigorously. In a damp, warm spot close to San Felipe, a *Sonchus* was displaying its large yellow head of flowers to the Christmas sun and looked a Merry Christmas to everybody.

Eagle Pass, Texas.

E. N. Plank.

Entomological.

A Scale Insect on Plums.

A SCALE insect which has hitherto been considered a comparatively rare species has recently attracted attention by its attacks on Plum-trees in New York state. One man from Niagara County reports that some of his Plum-trees have been killed by it, but no instances of this kind have yet come under my observation. When it occurs in such numbers as to nearly cover the bark, as shown in the accompanying illustration on this page, there can be no doubt that it is capable of injuring the trees. This illustration is from a photograph of an infested branch of the Bradshaw Plum. On the twig at the right are seen scars showing where some of the scales have been removed. The actual length and width of a full-grown scale is indicated by the cross lines in the illustration. The dimensions are usually about five millimeters by four—that is to say, about seven thirty-seconds by five thirty-seconds of an inch.

At the present writing, June 20th, the scales are filled with a whitish powder, which, examined with a lens, proves to be composed of eggs. The young lice which are produced from the eggs in the spring had already issued from the old scales this season about May 10th, when my attention was first called to the insect. The branches were then covered with a sticky substance like honeydew, evidently secreted by the young insects. On leaving the old scale they crawl over the branches till, finding a convenient location, they attach themselves to the bark. They seem to prefer a location on the under side of the limbs. At first they are whitish, or nearly transparent, but gradually assume the dark reddish brown color of the mature insect.

Mr. L. O. Howard, the United States Entomologist, to whom specimens were submitted for identification, states that it is a somewhat rare species known as *Lecanium cerasifex*. He advocates spraying with dilute kerosene emulsion when the young insects first appear in the spring. The scales are soft and easily loosened from their attachment, and might readily be brushed or scraped from the larger branches.

Thus far I have seen the insect in Niagara, Monroe and Ontario Counties, indicating that it is quite widely distributed in western New York. So far as I have observed, Plums are most seriously attacked, though the insect has also been found on Apple, Pear, Maple and *Cissus*, showing that it has a wide range of host plants.

Geneva, N. Y.

S. A. Beach.

New or Little-known Plants.

Deutzia discolor, var. *purpurascens*.

THIS plant was discovered in the Chinese province of Yun-nan by the French missionary Delavay, who, in 1888, sent seed of it to the Museum in Paris. Last year flowers were shown in Paris by Monsieur Cornu, at an exhibition of the French Horticultural Society, from a plant growing in the garden of the Museum, and early in June

a plant flowered in the Arnold Arboretum, and again during the present season.

Deutzia discolor, var. *purpurascens* (see p. 287), is a shrub of neat, compact habit, two to three feet tall, with slender stems, thin ovate leaves scabrous on the upper surface and compact panicles of pale pink flowers. From *Deutzia discolor*, a species of central China not yet in our gardens, it differs in its shorter, thicker and rougher leaves, in its thicker pedicels, much broader calyx-lobes and colored petals; like that plant it has unusually broad petaloid filaments.

The hardiness of the Yun-nan plant in our northern states cannot be assured yet, as the plant in the Arboretum has been wintered, as a measure of precaution, in a cold frame; but the climate of Yun-nan is of such a semi-tropical character that only plants from its high mountains can be ex-



Fig. 47.—Branch of Plum infested with scale, *Lecanium cerasifex*.

pected to flourish here. From Philadelphia southward, however, this *Deutzia*, peculiar in the color of its abundant flowers, may be expected to become a valuable and favorite garden-plant.

Plant Notes.

MORINA LONGIFOLIA.—Just now this is one of the most interesting hardy plants in flower, and is at the same time one of the rarest. Mr. Orpet writes that it has proved perfectly hardy in eastern Massachusetts, having survived three winters there without protection, and it has been grown on from the seedling stage in the position it now occupies. This is the second season of its flowering there, and it is much more striking than it was last year, and the flower-spikes are stronger. When not in bloom the plant

resembles a Thistle, so much so in fact as to endanger its existence when the border is being weeded, but a label has so far protected it. The flowers are produced in whorls round the stem for the greater part of its length, or about two feet, and on first opening these are white and resemble those of a *Verbascum*, but each day they change color through various shades of pink to a deep carmine as they fade. There seems to be no special care needed in the cultivation of *Morina longifolia*; it is a plant that should be put in the front row of the border, because of its dwarf habit, and it will not then be smothered by coarser-growing plants, as is too often the case with the weaker border-plants. Two other species, *M. Wallichii* and *M. Coulteriana*, are in cultivation, but are exceedingly rare; the plant often seen in seed-lists as *M. elegans* is synonymous with *M. longifolia*, and all are natives of the Himalayas. The easiest way to propagate the plant is by seeds, which germinate freely when sown in the greenhouse in spring. Mr. Orpet writes that the plant he has raised promises to seed this year.

STROPHANTHUS PETERSIANUS.—This new plant has lately flowered for the first time in a stove at Kew, and has attracted attention on account of its yellow and red octopus-like flowers, borne on the ends of short lateral branches which spring from the main stem. The plant is a climber with ovate-lanceolate leaves, and the flowers are funnel-shaped, with a broad-mouthed tube one and a half inches long, the apex surrounded by a fringe of erect lanceolate scales half an inch long, and the five twisted corolla lobes hanging down to a length of six inches, suggestive of the arms of the octopus or the snakes of Medusa. *Strophanthus* is a tropical genus of about twenty species of trees and shrubs, some of which are known to yield a most deadly poison. Several species, namely, *S. dichotomus*, *S. Bullenianus* and *S. longicaudatus*, are known in gardens, but they are inferior in floral attractiveness to this new one. The Kew plant was raised from seeds received from Delagoa Bay in 1884.

ROSA SETIGERA.—We have often spoken of the value of this native Rose, the only American Rose with climbing stems, and yet it takes a long time for even a good plant to work its way into gardens, and this one is still too much neglected. The Prairie Rose is perfectly hardy in the northern states; it has clean, large and abundant foliage, and it has the merit of blooming after the general rose season is past, being at its best in this latitude in the second and third weeks of July. When trained to a pillar or over a veranda its clusters of large, rose-colored, single flowers make a brighter display than any of the double-flowered Roses. It can also be planted alone in an open space, where its stems will rise for three or four feet and then arch over and trail on the ground, forming a mound of foliage ten or twelve feet in diameter. It is still more effectively planted at the top of a bank, from which its strong and graceful shoots will trail down for a distance of fifteen or twenty feet. Unfortunately, it has no perfume.

LYTHRUM SALICARIA.—This is not a native plant, but it has become so thoroughly naturalized that it is common in moist meadow-land throughout all our eastern states. In Europe it is found, naturally, on the banks of rivers, and here it can be most effectively used on the borders of water where its tall spikes, from four to six feet high, bearing abundant dark purple flowers, are seen to the best advantage, with a background of foliage. This long inflorescence, too, makes the plant useful for cutting when the spikes are loosely arranged in large vases. There are one or two well-marked varieties which are as good or better than the type, and all of them keep in flower for a long time. This loose stripe belongs to that sturdy class of plants which need no looking after when they once get fair root-hold.

NELUMBium SPECIOSUM.—About five years ago we gave an illustrated account of a pond in New Jersey where the Sacred Lotus had become naturalized, but the cultivation of all

aquatic plants has increased so rapidly in this country that it is no longer extraordinary to find this Lotus running wild. The latest example of this which has come to our notice is in a pond near Little Falls, New Jersey, in which Mr. N. Radcliffe placed a single root of *Nelumbium speciosum* in May, 1892. He set the root a short distance from the shore of a small pond rather more than one hundred feet long and fifty feet wide, and built a stone-wall about it two feet thick for protection. This boundary, however, has failed to restrain it, and this year it has occupied at least two-thirds of the pond and is rapidly taking possession of the remainder. Many of the large leaves measure more than thirty inches in diameter, and a hundred open flowers can be seen any morning, borne on graceful stems which hold them five or six feet above the water. No aquatic plant is more effective than this *Nelumbium* with its noble foliage and pink flowers of giant size, but without any suggestion of coarseness, and few plants require less attention.

Cultural Department.

The Rock-garden.

THE rock-garden in July lacks some of its brightness in June, but with many new flowers it continues interesting. *Campanula Carpathica*, in many varietal forms and shades of blue and white, from self-sown seedlings, with the dwarf variety of *C. grandiflora*, from Japan, known as *Mariesi*; the handsome *C. macrantha*, *C. Tenorei*, *C. Pallasii* and *C. Gargauica* combine to make blue a dominant color. Columbines, with the exception of *Aquilegia chrysantha* and *A. Skinneri*, are all gone by. Pinks are in profusion. *Dianthus arenarius*, the Sand Pink, is particularly happy, and will evidently care for itself without any trouble. Several seedlings appear, but as we have also the nearly allied forms of *D. plumarius*, the Cyclops and Maiden Pinks, it is doubtful whether they will come true. The Sand Pink is a compact-growing, small-flowered species, with much-slashed petals, of light rose, and a blotch of magenta at the base of each petal. A mass of these is very effective. *D. subcaulescens* is a most diminutive and truly alpine species and delights to penetrate clefts of rock. It is becoming re-established after removal last year, when it appeared as if we should lose it. The flowers are small, light rose, borne on slender stems not more than two inches long.

Interspersed among these low-growing plants we have the Meadow Sweet, *Spiraea ulmaria*, white; *S. venusta* and *S. palmata*, pink; some tall *Campanulas*, *Aster concolor* and *A. Bessarabicus* to break the surface effectively. *Oenothera Missouriensis* comes in toward the end of June and continues to blossom until autumn. It is an excellent plant for rather dry soils and ought to be in every garden. Here we have it where its trailing stems gracefully hang over the rocks. *Heuchera sanguinea*, too, is a continuous bloomer. *Alyssum argenteum*, with silvery leaves and heads of greenish-yellow flowers, is not particularly showy, but it deserves a nook in the rock-garden. Rock Roses come and go, their flowers lasting but a day or two. These low-growing evergreens are perfectly at home in sunny positions in dry soil. *Aster concolor*, although strictly speaking a border plant, we find a place for, and against a wall in restricted territory is very showy.

Sedums, *Sempervivums* and *Saxifrages* along the edges of paths must not be overlooked, and are just where they ought always to be. They are chiefly noted for neatness of habit and symmetry of form, and among them the cobwebby *Sempervivum arachnoideum* is conspicuous. If not particularly striking in bloom, many of them are quite pretty, and where we have them in abundance some are allowed to bloom, although this means death. The flowers are borne in dichotomous cymes, and present an umbel-like head of star-shaped blossoms, generally red or rose in color, but sometimes yellow. The best-known species and varieties are *S. arenarium*, *S. Atlanticum*, *S. barbatulum*, a pretty little species, and very distinct; *S. calcereum*, one of the commonest, and often used for bedding; *S. glaucum*, *S. grandiflorum* and *S. Tectorum*. Among Sedums, *S. acre* is a very common but pretty yellow-flowered species; *S. Anacamperos*, with rather broad glaucous foliage and running underground stems, comes up between the rocks, and could be used with advantage to cover barren rocky places. The flowers are small, purplish, borne in dense globose heads. *S. glaucum* is dwarf, neat, but tender; *S. lydium*, a pretty pink; *S. sexangulare*, very neat, green; *S. pulchellum*, the Widow's Cross, is one of the hand-

somest of all, being an abundant bloomer—so much so, that it often flowers itself to death. These and many more can be used along rocky paths, and always attract attention. Saxifrages are also useful in similar situations, but we are somewhat restricted with these; none of the crustaceous section apparently are able to endure either our bright sunshine in summer or cold in winter.

Among Cranesbills, the showy, but generally despised native, *Geranium maculatum* is the first to bloom in spring, and is long ago past. Now we have *C. Ibericum platytenium*, a handsome blue-purple; *C. Endressi*, rose-pink; *C. sanguineum*, deep rose, and *C. pratense*, white and blue—all bright showy kinds with handsome foliage. The Giant Herons-bill, *Erodium Manescavi*, holds out well; once we thought it was lost, being reputed tender in England, but we have made the discovery in this case, as with others, that the succulent roots decay from excessive moisture rather than cold. *E. macradenium* is a gem among them, with finely cut foliage and delicately veined rosy flowers. *Achillea aurea*, yellow, and *A. Mongolica*, white, are both good Yarrowes, and the best of the low-growing kinds. The majestic *Delphinium Przewalskianum* is just opening, and although not a particularly bright yellow, is unique among perennial Larkspurs. *Armeria maritima*, the Sea Pink, and *Astragalus Monspensulanus*, the Montpellier Milk Vetch, continue, and so do the Alpine and Iceland Poppies. A considerable proportion of these are becoming double, which seems to be the case with all Poppies under cultivation. They are not as handsome as the single kinds. *Lotus corniculatus* occupies crevices along the paths, threatening in some places to take possession altogether. Along the edge of a wild shrubbery bordering the rock-garden, we planted a few years ago a lot of the perennial Peas, white and pink, and here they climb and make a very effective setting.

Wellesley, Mass.

T. D. H.

Hardy Plants which Flower in Early July.

THE nettle-leaved Mullein (*Verbascum Chaixii*), a biennial from southern and central Europe, is a very pretty plant. The word Mullein seems to carry with it a prejudice, since it is the name of one of our commonest weeds, but there are several beautiful species of *Verbascum* perfectly hardy and not difficult to grow. The subject of this note, which came into flower about July 1st, grows nearly three feet high, bearing its bright yellow or sometimes white flowers in a racemed panicle. The flowers are best in the first half of the day. Toward night they partly close or seem withered, although they open again as bright as ever the next morning.

Among the most attractive of the California bulbous plants now in bloom is *Calochortus macrocarpus*, with its erect stems nearly two feet high and large handsome light blue flowers. *C. venustus*, in several varieties, is also in bloom, and I cannot think of a more attractive group of flowering plants at this season than a clump of this species, with each variety represented. I believe this species more than any other must have suggested the common name Butterfly Tulips, which is applied to many of the *Calochorti*. Two other species now in bloom are *C. longibarbus* and *C. splendens*, both very pretty and free-flowering.

Brodiaea capitata has two forms, a white and a blue one, which flower simultaneously, and it seems to me should be grouped together. I am greatly pleased with *B. pedunculata*, which I have in flower for the first time. The flowers are borne in a large spreading umbel which rests on a stem six inches high. Each individual flower has a stem of its own about as long as that of the umbel. The flowers, ten to twenty in each umbel, are nearly white, striped with blue outside and nearly an inch wide. They open in long succession and are quite durable.

Cephalaria Tartarica is another interesting plant at this season, when it bears heads of creamy yellow flowers two inches wide on ample stems for cutting. The plants are about six feet high.

Coronilla varia, with its pink and white flowers in drooping umbels, is also making a pretty show. It is surprising to see how much of a spread a very few of these plants will make, and the flowers may be used to great advantage for cutting. Very useful, too, at this time is *Gaillardia grandiflora*. Its large red and yellow daisy-shaped flowers are so durable, either when left on the plants or when cut and placed in water, that one can hardly afford to be without it. A good companion to *Gaillardia*, flowering about the same time, is the Chamomile (*Anthemis tinctoria*), a plant which produces, in great abundance, pretty bright yellow flowers, a little smaller than

those of the common field Daisy. It is also good for cutting. It needs a good deal of room.

Pentstemon Rœzii, from California, grows well here. It has a great abundance of pretty bluish-purple flowers about an inch long. It is a low plant, scarcely a foot high. The ordinary collected plants are rather troublesome subjects to establish, but I think the young seedlings can be transplanted with little loss.

Few hardy plants afford more or prettier blooms than *Linum flavum*, and its stems are of fairly good length for cutting. It resents imperfect drainage. *Lychnis Haageana* and *L. grandiflora*, both having large showy red flowers, bloom about this time. They are quite showy in the border, but not so well suited for cutting. *L. Chalcedonica*, just going by, is also very fine when at its best, but is shorter-lived than some others of the genus.

Oenothera fruticosa major and *O. riparia* are both very fine species, with good rigid, bright yellow flowers.

Of the Lilies, *L. Grayi* is just passing out of bloom. The various forms of *L. elegans* are nearly past, while *L. concolor*, with its small and bright scarlet flowers, is just at its best. I find that this species and its apparently closely allied relative, *L. Coridion*, do very well in this climate and soil. A sandy or slaty soil suits them, and I never have succeeded in persuading them to bloom in a heavy soil. The largest Japan-grown bulbs I have been able to secure will nearly double in size here in a single season, and the second season the stalks are fully a third taller. *L. concolor* I think the more attractive of the two, and when established in the right soil yields a good supply of choice flowers. *L. bulbiferum*, from Europe, is just in bloom. It is a very pretty species, with light red flowers. *L. Canadense* is now at its best, and the variety of shades this plant gives, from light yellow to dark red, is very pleasing. *L. tennifolium* has already bloomed, though there is occasionally a late flower still to be seen. *L. Krameri*, which is just coming into bloom, has a very delicately tinted flower, a reddish-white. It is a species that, with me, will not bloom every year. Whether the bulbs require a season's rest every other year, or whether this soil is not suited to it, I am not able to say. *L. Humboldtii*, one of the finest of the California group, is just in bloom. It requires two or three years to establish this plant. *L. Hansoni* never blooms the first season with me. Indeed, those which flowered this year did not come up at all last season, and I supposed them dead. They seem to have been growing, however, and came up very strong the second season after planting.

Charlotte, Vt.

F. H. Horsford.

Carnations and Pinks.

IN spite, or perhaps because, of the great popularity of Carnations as trade flowers we find little or no improvement among them as garden-plants. Until the advent of the Marguerite Carnations, a few years since, we were practically without a race of free-flowering garden varieties, and are yet without any remontant Carnations which are perfectly hardy, in an old stage, in this latitude. The old border kinds we have, such as *Crimson Clove* and *Gloire de Nancy*, with beautiful, fragrant flowers of the largest size, but their thick woody stems are split by frosts, and they require constant renewal if they are to be retained, and they furnish only one crop of flowers. Of even stronger habit, the *Souvenir de la Malmaison*, while hardy as the Cloves, is rather a plant for the glass house, under which shelter it is easily the largest and handsomest of the Carnations. Besides the exquisite old blush, there are now to be had pink and crimson *Malmaisons*. These are plants for private growers, as they are not free enough in flower for trade purposes.

Treated as biennials, ordinary Carnations are fairly satisfactory in giving a profusion of bloom the second year, and from good seed one has a fair lot of double, though seldom first-rate, flowers, and many single ones. Seed may be planted now, and in this latitude the young plants will winter out without protection. They sometimes linger over the second, or even the third year, but usually are scarcely worth saving. The seed one secures at the florists' indicates that the Carnations considered worth saving must primarily have the long-stemmed habit, which, while perhaps important, if their flowers are to be cut, is fatal to their effectiveness in the garden, as the plants must be staked or brushed so that flowers can be enjoyed—if flowers can ever be enjoyed among a lot of stakes. Of course, by retarding the florists' Carnations and wintering them in frames, one can have all the fashionable varieties for summer flowering, but they are all bred to long stems and are not what we wish for gardens.

The Marguerite Carnations, especially the dwarf kinds, are fairly satisfactory garden-plants, though the flowers are often thin in petal, and the colors often lack a little in depth and solidity. However, if one buys the separate colors and selects the best flowers from season to season no doubt they would leave little to be desired. If we could infuse some of the remountant character of the Carnation into the Pinks, with, perhaps, some of its colors, we should have a great race of garden-flowers. A cross of that kind was made five or six years ago, and has since been introduced twice to the novelty-loving public under two different names. The plants are perfectly hardy, but they are sprawling, long-stemmed subjects, with the dullest of single flowers. The hybridizer of these simply spoiled some good Scotch Pinks, which in their purity

seem that such an improvement would not be difficult. The new Pink, Her Majesty, seems to be a new break in the direction of increased size. Growing in my border with no attention, this variety has produced flowers freely of the size of an ordinary Carnation on short wiry stems. The narrow foliage is scarcely as glaucous as that of *D. plumarius*, and with me the calyces of the flowers have mostly split, though they are said not to have that habit by the introducer. The plant is a decided gain, though I doubt if a border of it would be as pleasing as one of the old double white Pink, which seems to have a rather more graceful habit. A break in the direction of an occasional flowering during the summer would be more welcomed than an increase in size.

Elizabeth, N. J.

J. N. Gerard.



Fig. 48.—*Deutzia discolor*, var. *purpurascens*.—See page 284.

are not to be despised as garden-plants. I once grew a border of these sweet flowers with great satisfaction, and a few still linger. They are wiry, sturdy, thrifty plants, as befits their name, and for large borders are to be recommended. The Scotch seed and plant houses furnish numbers of these in laced and fancy varieties.

My ideal *Dianthus* for a border, however, would be one like the old double white, with a more continuous habit of flower, and, perhaps, a greater range of color; size is a matter of less importance. The old double white has been beloved of generations, and is one of the sweetest of flowers, and it may, perhaps, seem hypercritical to wish for an improvement, especially as the glaucous foliage is always ornamental, but it would

Garden Strawberries.

MORE trouble is often taken in planting the Strawberry-bed for home consumption than is really needed. It has been our experience that a bed is not profitable after it has borne fruit two years, and therefore it is hoed over at this season, and late Cabbage and Cauliflower are put in the place after the soil is well manured and dug. At the same time the plot from which crops of early Beets, Beans, Turnips and Lettuce have been taken is prepared for the annual planting of a new bed of Strawberries, and in this way no ground is left idle at any period during the summer, and the greater portion of it produces two crops. As soon as the crop of fruit is gathered,

the best runners are all taken and layered in pots plunged in the soil between the rows, and in about a month these are ready to be taken and set out in the new bed, where they are kept watered for a few days and well hoed through the autumn months, all runners being picked off as they appear. These young plants make strong crowns in the three months of growing weather, and never fail to give us the following summer a full crop of large-sized fruit—larger, indeed, than we can get from the bed that is two years old, but not in such quantity. It is the old bed, therefore, which furnishes the fruit for preserving, while the young one supplies the table.

Where the Strawberry-weevil is troublesome it is a wise precaution to set the plants three in a hill, in a triangle, about a foot apart, but since adopting the plan of limiting a bed to two crops we have had little difficulty from this pest, and we set the rows straight. Some twenty-two kinds have been tried here in four years, and we have settled down to three kinds that are all to be relied upon here to be of good flavor and sure crop—Michel's Early for the first, Parker Earle for the main crop, and Gandy to produce fine dessert fruit. Some day we hope to try the Marshall; it is a wonderful Strawberry, but times must be better, or the Marshall Strawberry cheaper, before it can be planted to any extent.

South Lancaster, Mass.

E. O. Orpet.

Raspberries.

GR^{EAT} as has been the advance all along the line in the improvement of small fruits we are still in special need of new varieties of Raspberries. Among the red varieties, Cuthbert is not quite hardy, and it is really raspy; that is, it has the worst feature of a raspberry, while lacking the best quality. It is a good berry to handle and to ship short distances. But very frequently the canes do not altogether overcome the severities of winter. It also has a tendency to send out blossoms in autumn if the weather is mild, and in this way the canes are weakened. Still the foliage rusts as little as that of any other, and on the whole it is our best red berry. Golden Queen is nearly as good, but it is softer. Both bear enormous crops, and the canes may stand quite close in the rows. What we need is the rich flavor of Turner and ability to stand and bear in rows, which Turner lacks. Rancocas is a failure, and Marlboro needs nursing. This last is of a class that easily loses foliage.

Among the black Raspberries, Kansas may yet prove the leader. Gregg was too liable to kill by frost. Palmer was a notable improvement, but not so big as Gregg, and in some sections it dies out quickly. I have a lot of seedlings, crosses of Davison and Gregg, that promise well. They are now planted for test.

The raspberry market is such a good one that it ought to tempt horticulturists to try seedlings till they get decided improvements. It occurred to me that the Shaffer might make a good parent; but so far all of its seedlings turn out to be pure black, and none of them are remarkable in any way.

Clinton, N. Y.

E. P. Powell.

Summer Pruning.—Where shrubs and trees are pruned for the purpose of increasing flowers, different species should, of course, receive different treatment. Those which bloom on wood made the previous year, like the Forsythias, Syringas and early Spiræas, should receive their main pruning soon after the flowers have fallen, so that the young wood will start to grow and develop flower-buds for the following spring. Plainly such buds will be sacrificed if the branches are taken off before flowering time in spring. On the other hand, Hydrangea paniculata, Hibiscus Syriacus, the late-blooming Tamarrisks and other shrubs which flower on the new growth, or the wood of the year, will bloom more abundantly when cut back hard in spring. Nevertheless, in any considerable collection of shrubs pruning must be attended to throughout the whole growing season. The surplus wood can always be thinned out during the summer, and clean-cut wounds will then heal more quickly than those made in frosty weather. This is particularly true of trees like the Birches and Maples, which in early spring bleed copiously, but quickly cover over wounds with new bark when in full leaf. Many shrubs are pruned too much, but where strong-growing ones are planted with those of more delicate habit, the robust ones must be restrained or they will smother their less vigorous neighbors. After a shrub has been carefully pruned, the surplus branches cut away to admit light, and the old flowering wood shortened in, it will still be necessary in midsummer to stop the stronger-growing shoots with the thumb and finger. This directs the vital forces of the plant to the development of flowering buds, and shrubs and

trees treated in this way will produce more flowers and fruit, and produce these when they are smaller than if they were left to themselves after the spring pruning. Summer pinching is useful, too, in ripening up the wood, so that it will be in good hard condition to endure the winter cold. The practice is especially good with trees which grow vigorously and in wet seasons when the branches continue to grow late. This work requires good judgment, it is true, but when carefully done it not only helps to form symmetrical plants, but it is the surest and safest means of making these plants strong, floriferous and fruitful.

Clinton, Conn.

R. S.

Correspondence.

Injuries by Seventeen-year Locusts.

To the Editor of GARDEN AND FOREST:

Sir,—The locusts have done much injury to our young trees here; many of them are punctured all over, and most of the young branches have died; others have not suffered so badly, but all are injured. Would it be advisable to cut off the damaged branches and burn them?

Cornwall-on-Hudson, N. Y.

D. G.

[Where these insects have abounded this year they have damaged trees severely. In some parts of New York and New Jersey fruit-trees have been cut back to the ground, not only every twig and branch, but even the trunks, having been used for oviposition. Little will be gained, however, by cutting the injured branches back. Branches which have been punctured so badly that they will die, will sooner or later be broken by the wind and fall off, while the tree will do what it can to repair the damages in the larger branches. If the twigs are cut back to the punctures as soon as the leaves die beyond them, something will be gained in the matter of appearance, but that is all. The burning of the branches would destroy a few thousand eggs, but this would make no impression on the millions of insects which will appear at their next resurrection. Professor J. B. Smith, of the New Jersey Agricultural Experiment Station, writes that almost every variety of trees except coniferous evergreens in that state have been attacked, and that all shrubs, even down to the Poison Ivy which climbs over the fence-posts, have been cut.—Ed.]

Recent Publications.

The Industries of Russia. English edition. Translated by John Martin Crawford, United States Consul to Russia.

The third volume of this important work, which is devoted to the agriculture and forestry of the empire, contains the best account of the composition and distribution of its forests and the methods adopted for their protection and development which has yet been published in the English language.

Russian forests, unlike those of Germany, are not the result of artificial sowing, but are of natural growth; and a Russian forest, like those of the United States, rarely consists of any single species of tree or of trees of the same age, but is made up of a mixture of trees of various species and ages. Unlike the forests of North America, however, the Russian forests of the north are composed of few species, their number increasing in lower latitudes, so that in the south a comparatively large variety of trees and shrubs is met with.

To the student of our American forests the small number of arborescent species of economic importance in the Russian forests will appear remarkable. The principal Russian trees are the Pine, Fir, Oak, Birch, the Trembling Poplar and the Linden; that is, these are the predominating species over immense areas of the empire. Other species, like the Beech, the Elm, the Silver Fir, the Larch and the Swiss Pine, in this work usually spoken of as Siberian Cedar, have, of course, great value economically, although, owing to climatic conditions, they are of inconsiderable geographical distribution within the empire.

The most widely distributed and important timber-tree

of Russia is the common Pine, *Pinus sylvestris*, which occurs in more or less continuous areas over at least two-thirds of the whole of European Russia, extending from nearly the seventieth degree of latitude in the north ten degrees south, that is, nearly to the northern boundary of the government of Kieff.

Of the Silver Firs, *Abies pectinata*, which is one of the most important timber-trees of central and western Europe, is of little importance in Russia, and only occurs in the governments of the Vistula to the west of that river, where it grows in company with the Beech. The Siberian Fir, *Abies Sibirica*, is of greater importance, covering as it does extensive areas in the north-eastern provinces.

But the most widely distributed of all the trees of Russia is the Birch, *Betula alba*, which grows over the greater portion of the empire in several varieties, which often intermix. This tree grows over almost the whole of European Russia, extending to the Lapland coast of the Arctic Ocean, and in the north-east to Pechora, in latitude sixty-seven north, ranging in the south to the steppes, into which it pushes for considerable distances along the river valleys, and reaching the Crimea and the mountains of the Caucasus.

It is only within the present century that timber has been regarded as marketable in Russia. A hundred years ago, when the forests were private property, they were looked upon as pasture-land from which any one who had need of the timber was free to cut it; and the Crown, as the proprietor of vast areas of woodland and of large numbers of peasants settled thereon, considered, too, the chief economic problem, so far as the forests were concerned, to be the satisfying of the wants of the peasants for timber, which facilitated the collection of the poll-tax, the forest itself not being regarded as a direct source of revenue. And although attempts were occasionally made to introduce forest-rules and regulations into the management of the Crown lands, forest-administration really dates no farther back than thirty years ago.

The first step taken was the replacement of the selective system of felling for the continuous periodic system, although this did not at first attain its chief economic purpose, which was to guarantee the renewal of the forests after felling, owing to the excessive extent of the land under forestry directions; and the most hopeful feature in the forest-administration is claimed to be the fact that Russian foresters recognize little value in much of the mere book-learning founded on German experience, and usually upon conditions which do not obtain in Russia. The impracticability of utilizing German experience in Russia "has given rise to the idea of the necessity of conducting and registering independent experiments for the purpose of discovering really practical measures capable of guaranteeing the best growth of Russian forests and the best means of renewing them. All this is still a matter of the future; but the results will not be long in favorably showing themselves, as the requisite agents are not wanting in the form of a sufficient number of foresters with a practical experience and a distinctly announced tendency on the part of the Forest Direction, to diminish the areas of the forest-ranges, with a view of enabling the foresters to raise the technical level of the forest-management after preliminary administrative problems have been successfully solved."

A considerable portion of Russia is still only covered by woodland, although the figures representing its extent are usually exaggerated, owing to the fact that this is made to include waste tracts which are unsuitable for cultivation, and consist of bogs; and from a carefully prepared account, which will be found upon page 326, it appears that in reality less than one-half of Russia is rich in forest-land; that one-fifth is poorer than Germany or France, and that one-eighth has scarcely any forest at all.

Articles made of wood have never given rise in Russia to great centres of manufacture, although whole series of various home industries have been supplied with material

by the forests. Near the Black Forest, in the Kherson government, peasant colonies occupy themselves with producing wooden ware, and this forest and others in the south are little more than widely extended ranges of village trade-shops; and all that part of Russia which is not completely denuded of trees is occupied by carriage-makers, coopers, joiners and turners, who supply the empire with their chief products. Curiously enough the inhabitants of one village often occupy themselves with one branch of a certain industry, while those of another village devote themselves exclusively to other branches of the same industry, different villages, though situated close together, often dividing among themselves the production of parts of one and the same article. The special occupation in the several villages in the Semenovsk district is the manufacture of spoons in the rough, while the people living in the second village turn them, and those in the third paint them, although in no single village and in no single family is a complete spoon produced. One district is famous for its manufacture of harmonicas, the work being divided among several master workmen. This industry, which was started fifty years ago by two peasants, has grown to considerable proportions, about two hundred and fifty thousand harmonicas being now turned out every year.

But the most important, probably, of the minor industries springing from the forest is the preparation of bast, the inner bark coating of the Linden, from which are made shoes, which are worn by a majority of the inhabitants of northern and eastern Russia. Hardly less important is the production of what is called "bast twist," from which our well-known bast mats are made. The amount of bast produced in Russia is extremely large. In the Viatka government alone about 500,000 trees are felled every year for this purpose.

The distillation of pitch and tar forms one of the oldest industries of Russia, and it is said, on trustworthy authority, that in the thirteenth century Kiev was trading in these articles with Breslau; and when Novgorod belonged to the Hanse League pitch was an important article of its foreign trade. Pine now forms almost the sole material for the production of pitch, although in early times in Russia, as well as in Germany, Fir-wood was much preferred for this purpose.

The average annual export of timber from Russia now amounts to 141,000,000 pounds, worth 48,000,000 roubles, and imports 12,500,000 pounds, worth 5,500,000 roubles.

Interesting chapters are devoted to the forest-resources and industries of the Caucasus and of Turkestan, but the length to which this notice has already extended precludes our referring to them at length or saying anything of the chapters on climate, soil, the system of Russian agriculture, cultivation of the soil, gardening, including kitchen-gardening and orcharding, or other subjects of interest to rural economists.

A bulletin on Peach yellows and Peach rosette, prepared by Mr. Erwin F. Smith, has just been published by the United States Department of Agriculture, which, while it contains no important new facts, brings together what is known of these diseases in convenient form. Besides Peaches, it has been known for a long time that Nectarines, Almonds and Apricots are subject to this disease, and it has been recently observed that the Japanese Plums are to a certain extent susceptible to it. Certainly it is a transmissible disease, and sound trees are subject to it. As to its nature there has been much speculation, and no fungi, bacteria or animal parasites have been identified as the cause. With our present knowledge, the Peach yellows seems nearest allied to that phenomenon in plants known as "variegation," which is a sort of disease manifesting itself in stunted growth, imperfect assimilation, hastened development and feeble vitality. Moreover, in a number of variegated plants this condition is transmissible to healthy stocks by budding or grafting in the same way as Peach yellows is. So far as known, the only remedy is to cut out and destroy all trees as soon as the disease is indicated, and it is best to burn them, roots and all, if possible. Peach rosette is

a disease of the same type as the yellows, but its first stages are more striking and its progress more rapid. Nothing is known of its cause, but it is virulently contagious, and in regions infected by either of these two diseases successful Peach-culture can only be assured by well-directed, vigorous and united effort in digging out and destroying diseased trees. This bulletin is well illustrated, and will be found interesting to every fruit-grower.

Notes.

Mr. E. G. Lodeman, instructor in horticulture at Cornell University, has sailed for Europe to investigate the diseases of grapes in France and Italy, and the methods of treating these diseases there by spraying and otherwise. He will spend the summer among European vineyards.

Maple-wood is so rapidly growing in favor in this country as flooring material that improved methods of preparing it have recently been devised. The demand has already reached extended proportions, and the *Northwestern Lumberman* states that the larger dealers are now obliged to make contracts for millions of feet far in advance of requirement, as is done with pine or any other wood of extensive consumption in the building trades and manufactures. It is now more generally used than any other wood for the floors of public buildings, and is largely employed in dwelling-houses also.

Occasionally there comes to this market from the West Indies a yellowish-red fruit, shaped like a hen's egg, but rather larger and usually called Grenadilla. This is botanically the fruit of *Cyphomandra betacea*, or the Tree Tomato, which is a native of the tropical Andes. In course of time it found its way to Jamaica, from which place it was sent by Mr. D. Morris, of Kew, then Director of the Botanical Gardens there, to India, Ceylon and other tropical countries. In South America it is largely used for cooking in place of the ordinary tomato, and in India it is becoming popular, where, when fully ripe, it is made into tarts, and is sometimes eaten raw like gooseberries, which it is said to resemble slightly in taste.

Many theories have been proposed to explain the absence of forests in large portions of the great inland basin of the United States, including both prairies which lie mainly east of the Missouri and the plains which lie west of that stream. A new explanation for the absence of trees in this area has lately been offered in the *London Geographical Journal* by Mr. J. W. Redway. He holds that seeds have been mainly carried and distributed through the agency of water, and that the spread of forest-growth without this natural aid, or some artificial aid, would be very slow. He argues that our treeless regions have never been overflowed by running streams since they became dry land, and consequently they have never been sown with forest-seed. Wherever the water of running streams has spread, seeds have been carried and forests have appeared. According to this view, these regions have always been treeless, and therefore Mr. Redway considers that the nature of the soil, which was the explanation offered by Lesquereux and Professor Whitney, and sweeping fires, which has been the most generally accepted view, are not the principal agents in causing this treeless condition.

It is definitely announced that the American Forestry Association will hold two meetings consecutively, one at Brooklyn, conjointly with the American Association for the Advancement of Science, and the second in the White Mountains. The meeting in Brooklyn will be held on Wednesday evening, August 22d, at the Packer Institute, and on Tuesday evening Mr. B. E. Fernow will deliver an illustrated lecture at the Academy of Music. On Friday, August 24th, the members of the Association will go to North Woodstock, New Hampshire, and in the evening a lecture will be delivered upon "The White Mountains," by the Hon. J. H. Walker, of Concord, New Hampshire, and an illustrated description of the itinerary of the excursion will be given by George H. Moses, Secretary of the New Hampshire Forest Commission. On Saturday there will be excursions in carriages and by special trains to different points in the White Mountain forests, and in the evening a session will be held at the Profile House. On Monday the members of the Association will have an opportunity to inspect the forest at various points, and in the evening at the Intervale House, Professor J. T. Rothrock will deliver a lecture.

The editor of the *Rural New Yorker* has been trying new varieties of Strawberries at the rate of about seventy-five varieties a year for fifteen years past, and the result of his experience is that he has only found one new variety in three years

that could fairly be pronounced superior to the then existing varieties; that is, in fifteen years of trial he can count five superior varieties which have succeeded in his particular location, namely, Crescent, Sharpless, Parker Earle, Timbrell and (doubtfully) Brandywine. For home use the old Charles Downing is still Mr. Carman's first choice where it thrives, and it does thrive over a wide extent of country. For earliest he would name Rio and Beder Wood. Of course, many other varieties are valuable in particular places. Mr. Durand's seedlings, for example, are incomparable in certain soils and exposures. The fact is there are few Concordes among Strawberries. Timbrell, which Mr. Carman considers unrivaled as a late berry in regard to firmness, productiveness and quality combined, makes a very poor showing in some other places, and so good an authority as J. H. Hale writes that his plants of that variety made a poor growth last year, rusted considerably, and in the trial-beds have been the most unsatisfactory of the sixty-eight varieties which fruited with him this year. Judging from what he has seen of it at home and in other places he should pronounce it practically of no value and utterly unworthy of cultivation.

Although not a single car-load of California fruit has reached this city for more than ten days, California plums and California cherries are still sold on the streets at prices not much above the ordinary retail figure. This is an indication of the extent to which cold-storage is employed in this city. But for the railroad blockade sixty or seventy car-loads of California fruit would be coming into this market every week at this season, and no doubt the absence of so large a portion of the supply explains why pineapples bring such good prices, why summer oranges from the Mediterranean are selling from \$5 a box and upward, and why bananas, although in great abundance, are in still greater demand. Niagara grapes are coming from Florida, but they are sour and not mature enough for market. The cherry season is practically over, although occasionally some good fruit comes from western New York. Good cherry currants can be had for ten cents a quart. The supply of huckleberries is still abundant, and the best ones now come from Shawangunk Mountains. Le Conte pears, from the south, bring \$6.50 and upward a barrel, and a few Jargonelles are coming from Maryland with Early Harvest, Sugar Tops and other summer varieties from near-by points, many of which are unripe, tasteless and deservedly cheap, while well-grown and well-ripened fruit is scarce and high. The Government crop reports show that the peach crop, taking the country all through, will not be one-quarter of an average, although in California it is almost up to the standard. Apples, too, will be in meagre supply and not reach half a crop. These reports also tend to strengthen prices, so that it is no wonder that hand-picked Astrachans and Sweet Boughs bring \$4.00 and upward a barrel, while standard peaches, like Hale's Early and Early Rivers, from Maryland and Delaware, are considered cheap when sold in quantity at \$2.00 a basket.

Edmund Williams, for two years past President of the New Jersey Horticultural Society and for many years its Recording Secretary and controlling force, died on July 12th, after a long illness, at his home in Montclair. Mr. Williams was recognized throughout the country as one of our leading authorities on fruits and their cultivation. He devoted his life to this work, and his habit of accurate observation and his sound judgment, added to absolute honesty and freedom from prejudice, gave his expressions of opinion unusual weight. He was a frequent contributor to this journal and other papers, and what he wrote had sterling practical value as the expression of a wide experience and a singularly clear insight. In character Mr. Williams was as simple as a child, modest, generous, public-spirited, truthful. Every one who casually met him was drawn to him at once by his kindly bearing, his sincerity and frankness, and yet few beyond the circle of his intimate friends knew the genuine worth of the man. His death means a loss to the cause of horticulture in his native state that is almost irreparable. He belonged to that older generation who pursued their chosen calling with an enthusiasm and devotion which seem to be lacking in more recent times, and there is no one left to fill his place, especially in the Horticultural Society, which he did much to organize, and which owes a large part of its success to his self-denying zeal. For many years Mr. Williams had been afflicted with an incurable disease, and his sufferings for the past three months have been so great that when the end came it was a relief to his friends to see him lying at rest. He was sixty-three years old, and he always lived on the farm where he was born and where he died.

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"Keep off the Grass."

COMPLAINT is made by a correspondent in another column that this warning meets his eye so often whenever he visits our great city parks that it seems to him inhospitable, and even as a broad suggestion that his presence is not desired. He argues that parks should welcome visitors and not repel them by needless restrictions; that they are made to use and not to look at only; that there is nothing so pleasant to feet that are wearied with constant walking on stone pavements as the feeling of soft turf under them; and finally, that, except in places which have been lately seeded, trampling does not injure, but actually helps, the growth of the grass.

No doubt, the fewer restrictions which it is necessary to impose on visitors to public parks the greater will be their general attractiveness, and if it is true that trampling helps the grass the legends on the signs of warning ought to be changed so as to read, "Please walk on the turf." But, plainly, there is a limit to the point where walking on the turf is beneficial. If our smaller parks in the densely populated part of this city, like Tompkins Square or Madison Square, were thrown open in the dry season, what are now stretches of grass would soon be dusty wastes, as disagreeable to the foot of the pedestrian as to his eye. In moister climates grass will thrive under an amount of trampling that it cannot endure here. We speak of "the turf" when we mean the sport of horse-racing because we use the language of a land where races are actually run on the grass, but the conditions are quite different here, and even lawn-tennis is not generally played on a lawn, because to keep a smooth, even turf requires a great expense and constant watering and fertilizing.

There is a neat fallacy concealed in the statement that parks are made to use, and not to look at. The beauty of a park is its highest use, and to destroy that beauty is to abuse, and not to use, it. Very pleasant it is to wander by a natural wood border, and people think they enjoy it and are using it when they break off the flowering branches and carry them away. Certainly, those who wish to use a park in this way, and mutilate trees and shrubbery, must be restrained, and no sensible person would consider

such a restraint unkind or inhospitable. Again, the pleasure of walking on the grass, like the pleasure of carrying away flowers and shrub-branches, is, no doubt, exaggerated. If we will take note of a hundred persons walking in a pasture ninety-nine will select a path, and if two of them are together they will follow it, even if they are compelled to walk in single file. That parks can be enjoyed without walking on the grass is proved by the fact that so many visit them in carriages, and if walking on the grass was the chief pleasure of visitors there would be less need of incurring great expense in laying out and constructing paths. No doubt, at times it is pleasant for children of all ages to roll on the grass and to play games on it, and even in the parks where the rules are strictest this is done to a much larger extent than people imagine. Where visitors are few in comparison to the grassy areas, as in the great meadows of Prospect Park, these spaces are thrown open most of the time. The meadow area of Central Park is made free whenever the condition of the grass will permit. Tennis and other games are allowed in certain portions of the park, but it is necessary there to keep the players away now and then in order to let the turf grow green again. Nevertheless, as many as 30,000 people a day often have permits for picnics in Central Park, and it is not uncommon to see a hundred thousand people on the grass at once.

No doubt, in parks which are properly planted there will be fewer temptations to make short cuts across the turf; for it is not so much the desire to walk on the grass as to get somewhere and make a new path that is really irritating to visitors. Well-laid park-paths will not only lead in an agreeable way to the points of special interest, but they will be laid so as to command the best views of the scenery. But, after all, a park is finally meant to be a refreshment to the spirit. An appeal to the eye is stronger than one to the soles of the feet. In every pastoral picture the grass is the essential and indispensable element of beauty, and it has a higher value as something to look at and look over than it has as something to walk on. So long as trampling does not mar its beauty it ought to be free to visitors, but just as soon as human feet deface it with lines of travel they should be restrained until it has time to recover. Of course, in the best park management the grass will receive special attention, and its growth will be encouraged by watering in dry weather wherever this is practicable. But when every care is given there will be times in our climate when, in populous cities, the warning, "Keep off the Grass," will be necessary if the parks are to retain that tender and restful beauty which gives them their supreme value.

Object-lessons in Forestry.

IN the issue of this journal for May 30th, and in the two following numbers, we published a continued article on the "Mixed Oak and Beech Forests of the Spessart," which sketched the general history of these woods and showed how the forests, although they have suffered considerably from certain vested privileges which allowed the removal of wood and the pasturing of animals, and even more from the ravages of war, are still most important sources of timber-supply and promise to keep increasing in value for years to come. The relation between the Oak and the Beech was particularly set forth, and it was shown that although when Oak and Beech grow together in thickets the less valuable Beech will finally overtop and kill the Oak, yet when properly managed the finest Oak-timber is found where the Beech is grown with it as a nurse. In the present number will be found the first part of a continuation of the same general subject by Sir Dietrich Brandis, in which the present system of management of these woods by the Bavarian Government will be given in more detail.

It was early in the century that the Spessart was incorporated into the kingdom of Bavaria, when the entire forest-system had to be reorganized and comprehensive plans adopted to regulate the cutting of the Oak-timber, to reclaim

the areas which had been devastated and to provide for future supplies. All the fundamental problems of forestry had to be dealt with, and an explanation of the manner in which these problems were met ought to prove useful to American readers. Of course, no forest experience in one part of the world can be exactly repeated in another. In fact, the details of any forest system will differ widely in different parts of the same country. Very plainly, we cannot attempt to grow the same species of trees as are grown in Franconia. We have a different soil, a different climate, different markets, different financial conditions; but because we cannot repeat the details of forest practice which are used elsewhere there is no reason why we should go blundering along without recognizing the fact that there are principles which lie at the basis of all successful forestry. When Sir Dietrich Brandis was appointed to organize the forest practice and the forest service of British India, he had to deal with Teak and Bamboo instead of with Oak and Beech. He found that Teak and Rosewood were being exterminated in all accessible areas. No protection was given to valuable trees, and no provision was made for their reproduction. Using the principles which he had learned in Germany, and properly mingling the trees which, as he found by observation, demanded light with those which endured shade, he founded a systematic management of the Teak-forests, which now brings a steadily increasing revenue to the Government and insures a lasting supply of timber.

The first requirement for a successful system of forestry in America is a thorough knowledge of the habits of our native trees. Until we can give an intelligent reason for planting any one kind in any given place and in any given company; until we can make a forecast which includes the entire life of a forest-tree up to the appointed date for felling it, and which takes into account the particular influence its growth and its removal will have upon the forest of which it is a part, our planting will be nothing but an experiment, and probably a failure. We can afford such experiments with a grain crop, for example, which takes but a year to mature, but if we are planning for forests which are to be permanent, and yet yield an annual timber crop, a mistake at the outset may be serious beyond computation. Unfortunately, our space compels us, as was the case in the earlier papers of this series, to abbreviate to some extent the instructive treatise which Dr. Brandis has prepared, but we have tried to omit nothing which will weaken the force of the argument which he addresses to Americans. Experience, he says—actual experience—is the only safe guide in forest-management. Hence it is wise to learn from the actual experience of those countries where the profession of forestry has attained its highest development. It would be a waste of time not to utilize the lessons which success and failure have taught other countries, and he sets forth in detail the management of the mixed wood of the Spessart in the hope that Americans will be induced to come and see and study for themselves. Forest-management in British India is successful, and this was based upon forestry as it had been developed in France and Germany. If a successful system of forest-management is ever built up in America it will be founded on the same solid principles.

North American Thorns.

THERE are several species of *Cratægus* in eastern North America that are excellent garden-plants, although they are rarely planted in this country, and yet the European Hawthorn, *Cratægus Oxyacantha*, is frequently used in our plantations in spite of the fact that our hot dry summers have such an effect upon it that it is often deprived of its leaves through fungal diseases in July or August. The best North American Hawthorns to plant in the northern states are *Cratægus mollis*, *Cratægus cordata*, *Cratægus punctata* and *Cratægus Crus-galli*. *Cra-*

tægus mollis, which grows to a larger size than the other species of the northern states, where it often appears as a broad-branched shapely tree, fully thirty feet tall, is the earliest American species to flower. The large flowers and brilliant scarlet fruit of this tree make it very ornamental in spring and early autumn, and the intricate branches, covered in their early years with lustrous chestnut-brown bark and armed with long curved spines, render it interesting in winter. The fruit, which is sometimes an inch and a quarter long, unfortunately falls almost as soon as it is ripe in August or September.

Cratægus cordata, known as the Washington Thorn, has the merit of flowering later than any of the other species, the small flowers opening here late in June; its thick and lustrous leaves turn in the autumn to brilliant shades of scarlet and orange, and the small bright red fruit hangs on the branches until late into the winter. As an ornamental plant the Washington Thorn is certainly one of the most valuable of the small North American trees. Once popular as a hedge-plant it is now rarely seen in our gardens.

Cratægus punctata is distinguished by its obovate rounded leaves with prominent veins, its large bright red or clear yellow fruit marked with many pale dots, and by its flat-topped head of spreading branches. Very common in all the Appalachian region and in the north central states and Ontario, it is often seen occupying hill-side pastures with open thickets or groves of considerable extent. The habit of this species and its large and showy fruit should recommend it to planters, who, up to this time, have generally failed to recognize its value.

But the most valuable of all our Hawthorns as an ornamental plant is the Cockspur or Newcastle Thorn, *Cratægus Crus-galli*, one of the most variable in the form of its leaves of all our Hawthorns, and one of the most widely distributed trees of eastern North America, ranging as it does from the valley of the St. Lawrence to the valley of the Colorado, in Texas. In cultivation the Cockspur Thorn is a shapely tree with a short trunk and wide-spreading branches, which sweep the ground when sufficient space is allowed them in which to develop and form a compact, round-topped, well-proportioned head. Such a specimen appears in our illustration on page 295 of this issue, made from a photograph of a tree that has been growing for sixty years in a garden near Boston, Massachusetts; it shows what the Cockspur Thorn is capable of becoming with good treatment. The flowers open in June after the large, thick and lustrous leaves have attained their full size, and at a time of the year when a comparatively small number of trees and shrubs are in bloom; the fruit is large and abundant, and hangs on the branches throughout the winter without diminution of brightness, and the leaves in the autumn turn to brilliant shades of orange and scarlet. This tree has to recommend it longevity, a good habit, hardiness, ample lustrous leaves brilliant in the autumn, abundant late-opening flowers and well-colored persistent fruit. It is not surprising, therefore, that it has attracted the attention of gardeners in Europe, where it is more highly prized and more frequently planted than any of the other American species, or than it has ever been in this country, although at one time it was used in large numbers by the farmers of Newcastle, Delaware, as a hedge-plant—a fact to which it owes one of its popular names.

The Thorns are best increased by seed, although particular varieties are multiplied by grafts. The seeds usually do not germinate until the second year, and the seedlings at first grow slowly; once established, however, in good, deep, rather moist soil, which all the species of the genus require in order to display all their beauties, they grow rapidly and begin to flower at the end of a few years.

Of all our small trees none surpass the Hawthorns in beauty or in interest, for two seedling plants are never alike, and their variations increase the pleasure of cultivating them. Many woody glades from New England to Texas owe their greatest charm to an abundance of Haw-

thorns, but these native trees are sought for almost in vain in our public parks and pleasure-grounds.

Foreign Correspondence.

London Letter.

HYBRID SWEET BRIER ROSES.—The Sweet-brier, or Eglantine, of the English hedgerows, is one of the most beautiful of our native plants. It is also allowed a place in a few gardens, mostly old-fashioned, I am afraid. But Lord Penzance has added to the Sweet-brier just those characters which were needed to make it attractive to all, namely, variety in the colors and of greater durability in the flowers. We have two beds of the Penzance hybrids (raised, I believe, from the Sweet-brier crossed with old-fashioned garden Roses), and they have been delightful for the last month or so. The possessors of the stock of these hybrids, Messrs. Keynes, Williams & Co., of Salisbury, exhibited a collection of them at the Rose show last week. They are Sweet-briers in everything, stems, leaves, fragrance and floriferousness, and their single or semi-double flowers range in color from white to crimson and coppery-red. They are charming plants for the lawn, for any position, in fact, where an elegant shrub is wanted, and they are, of course, as hardy as the Sweet-brier itself. Names have been given to nine of the most distinct. These are Amy Robsart, deep rose; Annie of Gierstein, dark crimson; Brenda, pale blush; Flora McIvor, pure white, flushed with rose; Lady Penzance, coppery-red, yellow at the base of the petals (a cross between Sweet-brier and Harrison's Rose); Lord Penzance, soft fawn or *écru*, yellow in the centre and flushed with pink (of the same parentage as the preceding); Lucy Ashton, white, with the petals edged with pink; Meg Merrilles, rich crimson; Rose Bradwardine, clear soft rose. Readers of GARDEN AND FOREST desirous of possessing these Roses may like to know that Messrs. Keynes, Williams & Co. offer them in November next.

GENISTA VIRGATA.—This is a king among Brooms; one might almost call it the grandest of all hardy June-flowering shrubs. It is represented at Kew by many huge bushes twelve feet high and through, which have been established many years among the trees as well as in several of the shrubberies, and they all have been clouds of gold for the last four weeks. Some Genistas are good for a few years and then require to be grubbed up and started afresh, and some are never good for much as garden-plants. But *G. virgata* is never unsightly, is quite hardy, is easily multiplied from cuttings, transplants well, and when in flower in June it is a gorgeous picture of golden-yellow flowers. Strangely enough, it is a rare plant in English gardens, although cultivated in the last century and described fifty years ago by Dr. Lindley in as enthusiastic language as I have used here. It is a native of Madeira and has been called *Spartium virgatum*.

A NEW HYBRID CLEMATIS.—Messrs. G. Jackman & Sons, of Woking, exhibited last week a distinct hybrid raised by them from the large-flowered variety *Star of India* and the red-flowered *C. coccinea*. It is intermediate between the two parents in the size and form of its flowers, which are campanulate, almost trumpet-shaped in outline, two inches in diameter and colored deep red-purple, with a stripe of red down the middle of each of the four fleshy petals. The leaves and habit are not unlike those of *C. coccinea*, and Messrs. Jackman say that the plant is a vigorous grower, perfectly hardy and very floriferous. This hybrid obtained a first-class certificate under the name of Countess of Onslow. Such a cross between two plants so divergent, especially in flower characters, is remarkable. Has the cross between *Clematis* and *Anemone* ever been tried? According to Sir Joseph Hooker these two genera are not separated by any good botanical characters. I have tried *Anemone Japonica* with *Clematis Stanleyi*, but did not succeed.

ANCHUSA ITALICA, the Italian Bugloss, is one of our most attractive hardy herbaceous perennials at this time of year. It is an erect, freely branched bush six feet high, crowded with hispid lanceolate dark green leaves, and thickly bespangled all over with rich gentian-blue flowers, each as large as a shilling and borne in terminal racemes. It is often described as a biennial, three feet high, with flowers half an inch in diameter, but even in the poor soil at Kew it is all that I have here described. For the herbaceous border it is a plant of more than ordinary merit, as it looks after itself, does not suffer in hot dry weather, and in the color of its flowers it possesses an exceptional value, clear blue being not too abundant among plants available for the ordinary border.

TALAUMA HODGSONI was discovered in the Sikkim Himalaya by Sir Joseph Hooker, and figured by him in his *Himalayan Plants*, where he describes it as a small tree, twenty to forty feet high, with large, handsome, coriaceous evergreen leaves and fleshy, fragrant, white flowers nearly as large as those of *Magnolia grandiflora*. It is common in the Sikkim forests at 2,000 to 4,000 feet elevation. There are two large specimens of it in the temperate-house at Kew, and one of them is now flowering for the first time in cultivation. Its leaves are two feet long by eight inches in width, and the flowers, which are borne on short lateral branches, have plum-purple sepals and ivory-white petals, their odor being powerful and aromatic. T. Hodgsoni was named in compliment to B. H. Hodgson, Esq., F.L.S., late of the Bengal service, whose death, at the age of ninety, occurred a few days ago.

ANGRÆCUM FOURNIERIANUM is a new species, which was shown by Messrs. F. Sander & Co. this week, and received a certificate from the Royal Horticultural Society. A botanical description of it by Dr. Kranzlin is published in the last number of the *Gardeners' Chronicle*. He describes it as a splendid novelty, of which I received fresh flowers from Messrs. Sander & Co. in 1892. It is a very fine plant, and a rival to *Æranthus Leonis*, the flowers two inches long, excluding the spur, and two inches in diameter, the leaves fleshy, strap-shaped and two feet long. The plant shown might be described as a small *A. eburneum*, with erect scapes of white flowers, in which the lip is three-lobed, the central narrowed into a point, the two lateral rounded. It was introduced from Madagascar by the exhibitors. Although not so showy as *A. eburneum* and *A. sesquipedale*, it possesses the characters of a good garden Orchid.

BRITISH FRUIT.—A great exhibition of British-grown fruit will be held on September the 29th and the three following days at the Crystal Palace, under the auspices of the Royal Horticultural Society, and there is every promise that it will be a success. Prizes of money as well as medals are to be given, and the exhibits must be bona fide the products of gardens in Great Britain and Ireland. An attempt to organize such an exhibition was made two years ago, but it fell through for want of management. The Royal Horticultural Society has lately given proofs of its capacity for running big shows, and they will, I believe, astonish even those who know something of what can be done in this country in the way of fruit production, if only the weather will be on its good behavior. Lectures are to be given by specialists in fruit culture, packing, etc., and efforts will be made to hold a general meeting of professional gardeners.

London.

W. Watson.

I have an opinion that the garden should look as though it belonged to the house, and the house as though it were conscious of and approved the garden. In passing from one to the other we should experience no sense of discord, but the sensations produced by the one should be continued with a delicate difference by the other.—ALFRED AUSTIN, in *The Garden that I Love*.

All buildings should be in unison with the immediate site in which they are seen.—*Planting and Rural Ornament*. 1796.

Plant Notes.

THE DWARF BUCKEYE.—Almost every large collection of shrubs contains one or more plants of *Æsculus parvifolia*, or, as it is more generally known, *Æ. (Pavia) macrostachya*, and yet it is not as common as so good a shrub should be. It was discovered in the Alleghany Mountains by Bartram more than a hundred years ago, and although it was introduced into English gardens soon after its discovery, Mr. Watson wrote to this journal last year that specimens in flower at Kew were looked upon by most visitors as botanical rarities. The Dwarf Buckeye has a very distinct habit, throwing out stout stems from the ground, some of which in old plants attain a length of eight or ten feet, the lower ones being raised at a very slight angle. In this way plants make mounds of dark green foliage ten or fifteen feet across, and not more than eight feet high. After a time the very lowest branches, which lie on the ground, take root, and the plant spreads still farther until it covers a circle sometimes twenty or thirty feet across. Just now, when there are few shrubs in bloom, the Dwarf Buckeye presents a striking spectacle, a good plant showing hundreds, and sometimes thousands, of erect flower-spikes from twelve to fifteen inches in length. The petals are snowy white, and the conspicuous pure white stamens extend half an inch beyond the corolla and give the whole a singularly light and feathery aspect. The flowers are especially beautiful in moonlight, when they appear to be glittering white, but in the day-time the cream-colored calyx and the anthers, which are a light terra-cotta color, give a slight tint to the prevailing white. The flowers open at the same time throughout the whole length of the spike, and a second crop of buds open as the first ones fade, so that they remain in perfection for a long time. Unlike the common Horse-chestnut, the foliage is not disfigured by fungi in midsummer, and, altogether, the Dwarf Buckeye is an attractive shrub the whole season through, and although it is a southern plant, it is hardy enough to flower well in all the New England states.

CATTLEYA CITRINA AURANTIACA.—*Cattleya citrina* is a very attractive species, although somewhat refractory, and it usually shows little variation. Four years ago, in Italy, a richly colored form of it appeared in several collections, for which the name *Aurantiaca* was proposed. A year later it appeared in two or three English collections, and now, according to a note in the *Orchid Review*, it has flowered again in England, and, as Mr. Rolfe well observes, the fact of its repeated appearance and the stability of its characters prove that it is not a mere accidental variation, but a well-marked variety. Its origin is uncertain, and it is also uncertain whether the several plants known can be traced to the same source. The flowers are larger than those of the type; the sepals and petals are much more spreading; the front lobe of the lip is elongated and about an inch long, and the whole flower is more deeply colored, the deep yellow approaching a true orange color.

LATHYRUS SPLENDENS.—So far as we know, this plant, which was spoken of so enthusiastically by Mr. Watson in a recent letter, has not proved hardy in our northern Atlantic states. Some seed which has been sold under this name has been spurious and produced plants which bear rose-colored flowers very inferior to those of the true species, but none of the plants, so far as we have been informed, have endured the winter. Still, some horticulturists, whose judgment is usually good, feel that additional efforts should be made to test the hardiness of this beautiful plant in the eastern states under some protection. Mr. E. D. Sturtevant writes that in his garden at Los Angeles, California, the plant usually begins to flower in February, but last year it began in October and continued all winter, producing its greatest amount of bloom in February and March. The flowers are of a satiny texture and of the richest carmine color, and when held between the eye and the sun they glow like rubies.

ASCLEPIAS TUBEROSA.—At the Centennial Exhibition in Philadelphia a large bed of these plants, which had been furnished by a firm of seedsmen from Holland, made a very bright show in midsummer, and it was said at the time that many Americans who admired the brilliant orange flowers manifested some disgust when, upon inquiry, they learned that the plants were nothing but the native Butterfly-weed. Notwithstanding the fact that this *Asclepias* is a common wild plant, its broad terminal corymbs of flowers upon erect stems are certainly very conspicuous with their rich orange-colored hoods, which are of a tint not common at any season. The plants are naturally found in dry, sandy or gravelly soil, but they will flourish in any good garden loam, and Mr. Jackson Dawson, of the Arnold Arboretum, who has a bed of them which he prizes very highly, writes that if they are not allowed to go to seed they will bear a second crop of flowers later in the season. Single plants look well on shrub borders, and the glowing flowers appear to good advantage against the dark green foliage. There is a variety known as *decumbens*, with reclining stems, which we have never seen in cultivation, and which ought to make a good plant for a rockery.

EARLY CHINA ASTERS.—There are cases when it is desirable to have China Asters as early as the middle of July, and it seems that they can readily be had at this time, or even earlier. A correspondent writes that he has tested a variety, the seed of which he received from Burpee under the name of *Queen of Spring*, and it flowered ten days ago. The seed was sown on the 15th of April and the plants were transplanted to the borders, where they received no special attention either in feeding or cultivation. They are fair-sized plants, with reflexed flowers of medium size, and are some weeks in advance of other varieties which were sown at the same time.

Cultural Department.

Notes on Trees and Shrubs.

PROBABLY so long as our fields and woods and mountain-slopes yield an abundant natural supply of blueberries, or huckleberries, as the fruits of the blue-fruited section of the genus *Vaccinium* are sometimes called, there will be comparatively little done in the direction of cultivating or improving by selection these valuable and popular fruits. The areas covered by these plants in many of our states are usually more than adequate to meet all local demands. With transportation facilities thousands of bushels of blueberries could be procured from the far north, where the fruit is never seen nor touched by man, and either decays or furnishes food for wild birds and animals.

While the species of the genus *Vaccinium* are found in all the cooler portions of the northern hemisphere the valuable hardy ones are probably nowhere so richly represented as in North America. When the time comes for their more extensive cultivation they will be found quite as susceptible to improvement as many of the garden-fruits which are now considered indispensable in our markets. In nature, there is often a very marked difference in the size, productiveness and quality of fruit from different plants of the same species, and the best forms might be readily improved. An indication of the results of such care is shown in the case of the Cranberries, close allies of the Blueberries, and now so much cultivated in certain districts. The culture of the Blueberry is not so difficult as is generally supposed, and it will thrive in any good garden-soil which is not too heavy, or where there is not too much clay or lime. Any plant which is found specially desirable may be readily propagated by portions of the roots or of the stolons or underground stems, by which single plants often spread and form large clumps, or tongued layers will form roots if kept moist.

The earliest of the Blueberries in this region to ripen its fruit is also one of the most common species. This is the so-called Dwarf Blueberry, *Vaccinium Pennsylvanicum*, which usually grows only from two or three inches to a foot in height, according to soil and situation, and which often covers some of the poorest and most rocky places. In this region it usually begins to ripen some of its berries about the end of the third week in June. On account of being earliest in the market this

pleasant-flavored fruit generally brings very good prices. Normally it is of a blue-black color, covered with a rich blue bloom, which rubs off in handling, although there are some varieties which have very little of the bloom.

Vaccinium Canadense, of the botanists, when seen in the garden, does not seem to differ much from *V. Pennsylvanicum*, but differences will be found in its generally broader, less-pointed and more pubescent leaves, in the more pubescent twigs, and in the fact that the leaf-margins seem entire, while minute bristle-pointed teeth are to be detected on the margins of *V. Pennsylvanicum*. It is inclined to become a larger plant than *V. Pennsylvanicum*. It is much like the latter in quality of fruit, though the berries probably average larger. Planted

surface and distinctly pale or glaucous beneath. The fruit of this species only begins to ripen when the best of the crop of *V. Pennsylvanicum* is past, and thus the local Blueberry season is much prolonged. This species seems to be more prolific than *V. Pennsylvanicum*, although sometimes much of the fruit falls prematurely, perhaps from fungal disease. The berries themselves are scarcely different from the other species, except that the crown of calyx-lobes is smaller and the berries are firmer and therefore keep longer and bear transportation better. While of good flavor, the berries are not quite so juicy and sweet.

The most conspicuous and, perhaps, altogether the finest of our native species is the High Blueberry, *Vaccinium corym-*



Fig. 49.—The Cockspur Thorn (*Crataegus Crus-galli*) in a Massachusetts Garden.—See page 292.

side by side the fruits ripen nearly together here. In the event of domestication, *V. Canadense* may be found more profitable to cultivate than *V. Pennsylvanicum*, as it seems quite as prolific. It is not found wild in this part of New England, occurring chiefly in higher altitudes or farther north.

Growing with *Vaccinium Pennsylvanicum* we have a distinct species in the so-called Low Blueberry, *V. vacillans*, the stems of which will grow to two or three times the height of the stems of *V. Pennsylvanicum*. Both foliage and stems are usually quite glabrous, the thick, oval or obovate leaves sometimes with very minute teeth around the margin, sometimes entire. The plants may be readily distinguished from *V. Pennsylvanicum* by the larger size, by the leaves being twice or three times the size and duller or lighter green on the upper

bosom, which commonly forms bushes six or eight feet or more in height and with stems sometimes two or three inches in diameter. The fruit is intermediate in ripening between *V. Pennsylvanicum* and *V. vacillans*; it is of fine flavor when fully ripe and averages larger than other kinds. It is extremely variable in fruit, however, and exceptionally prolific, and large-fruited individuals are often found, and altogether it is a plant likely to reward any well-directed efforts toward its improvement from a horticultural point of view. Plants with black fruit, or without the blue bloom, are common in nature, and from this and other characters botanical varieties of the species have been described, although not easily identified by the average botanist.

Years ago, in some of the western states, a High Blueberry

with extraordinarily large fruit, of extra quality, was widely advertised by some unscrupulous nurserymen, and thousands of plants were sold. These afterward proved to be merely a variety of our native Shad-bush or June-berry (*Amelanchier Canadensis*), the fruit of which is by no means unpalatable, but which, botanically and culinarily, is widely different from a blueberry.

Arnold Arboretum.

J. G. Jack.

Perennial Sweet Peas.

NOW that the annual varieties of flowering Peas are so popular as garden-flowers, the thought occurs that those of perennial duration are also among the best of garden-plants that are easy of growth, and they do not require half the care and attention that is necessary to get the best results from the annual sorts. All of these hardy kinds can readily be raised from seeds, but where a special variety is wanted, or perpetuated, it is best to rely on cuttings taken in fall after the flowering period is past, or early in spring from cuttings taken from old plants stored in the greenhouse for that purpose. An old root will furnish a large quantity of good cuttings, and ninety per cent. of these will root and flower the same year if planted in the open ground. Peas, in common with all others of the Pulse family, require a good soil, one, above all, that is moist in summer, or that can easily be watered in such dry weather as we are suffering from now.

The most useful species, so far as we have found, is *Lathyrus latifolius*; it is also the most often seen in gardens along with its white variety called *Albus*. The latter is a valuable garden-flower, specially useful for florists and others who require white flowers in quantity in summer, as there are frequently five and six flowers to each stem, and these last well when cut. There is a variety of *L. latifolius* called *Splendens* which may be regarded as the best type, but one that cannot be depended upon to come true from seed. In this respect it resembles the white form, so that it is best to obtain plants instead of seeds of these two kinds. It is rather unfortunate that there should be a mere variety called *Splendens* when there is such a fine species of the same name. It has more than once occurred that when trying to obtain the latter the other has been sent instead, and the error was not discovered until after considerable time had passed. I am in serious doubt whether this Californian *L. splendens* is really hardy in the east, for it never seems to have survived the winter here.

There is another good species called *Lathyrus grandiflorus*, or *biflorus*. It is the largest of all in size of individual flowers, but it rarely happens that there are more than two flowers on a stem. It is quite hardy, a good perennial, and should be grown where the others are appreciated.

Lathyrus sylvestris is also a perennial plant, but much inferior to all the others named. In habit it resembles *L. latifolius*, but the flowers are smaller and paler in color. Of *L. tuberosus* we have had a good opinion for several years. It is the smallest grower of all, the vines being very slender, and produced from a tuberous root not unlike a small potato. It also has the peculiarity of coming and going as it pleases; sometimes it is in one place, and then in another, as it spreads from the roots, but not to such an extent as to make it objectionable, for the flowers are very pretty and abundant, though small. It is a plant that will take care of itself in a semi-wild situation, and be sure to flower every year. It never grows more than two feet high, though it requires support, as do all the others, and this is best afforded by planting near a fence, or even against a building, where the shoots may be trained upon wires. If grown in borders the plants must have a few Pea-stakes neatly set for their support; but a semi-wild garden suits them, where they may ramble at will.

South Lancaster, Mass.

E. O. Orpet.

Pelargoniums.

FOR some years past Pelargoniums have not received the attention to which their merits entitle them. In richness of coloring their flowers have no superiors, and well-grown plants in full bloom attract universal attention; in short, they can hardly be excelled for the decoration of conservatories or greenhouses. Plants which are now going out of bloom should be set out-of-doors and watered more sparingly until they lose most of their leaves and their wood becomes well hardened up. If it is desirable to have large plants they should be cut well back about the middle of August, and then shaken out and repotted when they have begun to break. For ordinary purposes smaller plants are desirable, and the best way to secure them is to insert cuttings in well-drained boxes of sand in September, placing them on a light shelf and giving

the treatment suitable for bedding Geraniums. When rooted it is preferable to keep the young plants somewhat dry until they are potted off in two-and-a-half-inch pots in January. As the pots fill with the roots the plants may be shifted to four, six and eight inch pots, the latter size being as large as is usually desirable. For compost any tolerably rich loam, such as is used for soft-wooded plants, will be found suitable for Pelargoniums. If the plants are to be shapely they must be well grown up to the light in a cool, airy house, and their growth should never be allowed to slacken for want of water. They should be syringed overhead every fine day, and a weekly fumigation is necessary, since no plants are more quickly ruined by the attacks of the green aphid. After the plants are well rooted in their flowering-pots liquid-manure may be given to them freely. Topping should be discontinued after the first week in March, as it is better to have Pelargoniums in bloom from the latter part of April until the beginning of June than later on, because hot weather tells on them severely.

Specimen Pelargonium-plants are rarely seen now in American exhibitions. Last year a prize offered by the Massachusetts Horticultural Society did not bring out a single entry. Some years ago they lost some of their popularity in Europe, but they are now largely grown and are extremely popular. Few cottage-windows in Great Britain are to be seen without one specimen at least. Owing to the cooler weather, their flowering season is much more prolonged there than it is here, continuing from April until July. Tens of thousands of beautifully grown plants are sold in Covent Garden Market, and the magnificent specimens shown at York, Manchester, London and other shows are worth a long journey to see. The best varieties which I have tested are *Duchess of Bedford*, a pure white; *Kingston Beauty*, pearly white, spotted with dark purple; *Princess of Teck*, pure white; *Madame Thibaut*, white, blotched with rose; *Beauty of Oxtou*, rich maroon; *Queen Victoria*, vermilion, margined with white; *Gloire de Tours*, bright scarlet; *Jeanne d'Arc*, blush, blotched with maroon; *Illuminator*, crimson-scarlet; *Duke of Albany*, crimson-maroon.

It is hard to obtain good varieties even from reputable American nurserymen, the varieties they have on hand being usually behind the time. If some enterprising firm would secure the best possible selection of these plants and exhibit a well-grown group of them at a prominent exhibition they would create something like a sensation and give the plants a well-merited boom.

Taunton, Mass.

W. N. Craig.

Gladioli.

GLADIOLUS OPPOSITIFLORUS, now in flower, is a very vigorous species, with leaves nearly five feet long and flower-scapes rising above them. The flowers are a rosy pink, with darker rose markings and splashes, and they are borne in opposite rows. The spikes show from twenty to thirty flowers, and on the strongest specimens have branches. This Gladiolus is interesting from the fact that it is supposed to be one of the parents of the *Gandavensis* hybrids, though not definitely proved. Its history has already been told in GARDEN AND FOREST, and it was lately figured in a colored plate in *The Garden*. It was originally credited to Madagascar, but it was lost to cultivation for many years. We owe the present stock to the energetic Herr Leichtlin, who has lately introduced it from Natal. It may be as well to say that if the history were suppressed this Gladiolus would not excite much attention from a fancier of the modern hybrids, with their compact spikes of handsome flowers. Still it has an informal beauty, and is an attractive plant of stately port, and at present is very bright and pleasing.

Gladiolus dracocephalus luteus is a plant of the greatest vigor, and only a trifle less tall than *G. oppositiflorus*. The variety differs from the type in having flowers of a more pronounced yellow, with reddish brown markings. As is well known, the Dragon's-head Gladiolus has hooded upper segments, and is a flower of quaint, although not striking, beauty.

Gladiolus platyphyllus is one of the newer species which has lately flowered. My specimens may not have done it justice, as they did not grow very strongly, and the leaves have shown no abnormal width. The flowers, of moderate size, are widely opened and borne on a lax spike. In color they were a greenish yellow, with reddish brown linings.

Gladioli are not among my favorite flowers, as they require special care at both ends of the season, when garden matters are rather pressing. Lately, however, I have been growing a small collection of the original species rather as objects of study and interest than as garden ornaments. Their beauty, as far as observed, is usually rather that of quaintness, though

among them are some pretty things, especially those with white flowers. I wintered out a dozen European and Asiatic species last season without protection, which flowered in May, and are now at rest. The selection of varieties was not very fortunate, as they were mostly twin brothers to *G. Segetum*, whose reddish purple color is never pleasing. *G. communis* alba was about the only one of the lot of good color and worth noting. While these bulbs seem perfectly hardy, it would probably be well to lift them, or, at least, keep them dry during the summer. One often finds *Gladiolus*-bulbs, especially of the *purpureo-auratus* section, which have lived out all winter, but I have never seen them grow strongly in such cases, and they usually disappear.

Elizabeth, N. J.

J. N. Gerard.

Vellozia elegans.

THE *Vellozias* number about fifty species, natives of tropical and southern Africa, Madagascar and Brazil. The species belonging to the eastern hemisphere are in some ways different from the Brazilian ones, and are ranked as the sub-species *Xerophyta*. The subject of this note was introduced in 1866, having been raised from seeds received from Madagascar or from South Africa. Its native country is not known, therefore, with certainty, as it has never, I think, been collected since its discovery. The plant having been sent to Kew, was named *Xerophyta elegans*, as it seemed to belong to Commerson's genus of that name, which is now reduced to *Vellozia*. As *V. elegans* the present species is figured, and well figured, in the *Botanical Magazine*, t. 5803.

This is not one of the showiest species, but is a very pretty and distinct plant, whose chief fault, horticulturally speaking, is the persistency of its flowers, which turn green and remain a very long time after their beauty has gone. At their first appearance they are very pure white stars, an inch or more across, borne singly on long slender stalks produced from the axils of the leaves. The foliage is abundant, consisting of long Sedge-like leaves closely set along the bristly stalks. No plant that I know, outside of the succulent kinds, can suffer so severe a drying as this and recover. One of my two plants was overlooked for several days, and when I next saw it was a most miserable-looking object, but I gave it a good watering and set it where it would be sure to be seen by the waterer, and to-day it is as fresh and bright as the other which has never been neglected. Pleasing as it is, I cannot help longing for the introduction of some of the Brazilian species, among which there are plants with flowers of purple, violet and yellow, some of them four inches in diameter.

Canton, Mass.

W. E. Endicott.

Notes from Cornell University.

THE DWARF JUNE-BERRY.—The two hundred plants of the Dwarf June-berry, called *Success*, which were set in 1888, were loaded with fruit this year, and for the first time since they came into bearing the robins allowed us to make one picking before they took the crop. The berries were placed on sale in the city in two places and labeled, and although a novelty on the market they readily brought twelve cents a quart. This June-berry, under cultivation, proves a most prolific bearer, and from the results obtained this year seems worthy of a more extensive trial.

THE APPLE-SCAB (*Fusicladium dendriticum*).—The Apple-orchards in western New York are seriously attacked by the Apple-scab this summer, and it seems more abundant than in the eastern part of the state. At the Horticultural Experiment Station about fifty varieties were recently examined to determine which were most seriously affected. The trees were set in 1889 and carried but little fruit, so the observations were mainly confined to the foliage. Some varieties were so badly affected that the leaves were blistered, curled up and smoky in appearance. Among those most seriously attacked are *Fameuse*, *Fall Pippin*, *McIntosh Red*, *Gravenstein*, *Seek-no-Further*, *Rhode Island Greening*, *Northern Spy*, *Canada Baldwin*, *Dickerson*, *Baldwin*, *Tallman Sweet*, *Fall Orange* and *Sweet Bough*. Among those least affected are *Hyslop Crab*, *Tetofsky*, *Wealthy*, *Golden Russet*, *Primate*, *Esopus Spitzenburg*, *Roxbury Russet*, *Yellow Transparent*, *Ewalt*, *Longfield* and *Alexander*.

RUSSIAN CHERRIES GRAFTED ON *PRUNUS PENNSYLVANICA*.—The Wild Red, Pin or Bird Cherry (*Prunus Pennsylvanica*) is recommended as a stock for grafts of sweet and sour Cherries. Such grafts are found to unite readily and bear early. One of the greatest objections to this stock is that it sprouts badly. In order to test the Wild Red Cherry as a stock for Russian varieties of Cherries, the following kinds were set in the spring:

Späte Amarelle, Minnesota Ostheim, Amarelle Hatine, Orel, Lithauer Weishel, Shatten Amarelle, Fouchis Morello, Riga and Bessarabian. Most of the cions were in good condition when set, and some grafts of all the varieties except Bessarabian took and are vigorous. If the growth of the graft will counteract the tendency in the stock to sprout, this common Wild Red Cherry may prove of great use to horticulturists.

Cornell University.

G. Harold Powell.

Correspondence.

The Injury to the Grape Crop.

To the Editor of GARDEN AND FOREST:

Sir,—The wide-spread failure of the grape crop should call attention to the possible loss of fruit from lack of pollenization. The vines came through the winter in good form. The canes were clean and healthy. New growth began all right, and buds were formed abundantly. Frost touched a few bunches, but so far all went on promisingly. Then began a continuous rain just as the blossoms were unfolding, a general rain, with floods over New York, Pennsylvania, Ohio and further west. This protracted down-pour continued nearly every day in May. The result was that the pollen of the opening flowers was unable to do its work; neither could insects assist as usual. I find Moore's Early, which is very early to blossom, bears a few bunches; and some vines protected on my house, of Goethe, Delaware and Gärtner, are not quite fruitless, but for the most part the grape crop is obliterated. This is a general fact over many grape-growing sections. In other sections frost did destructive work. The question follows, if it is possible for us in any way to anticipate a loss of this sort. I have not a bushel where I should have a ton. Can we devise any protection during the flowering season? Keeping bees in our vineyards I know to be of great value, but can it save our crop in spite of continuous storms? I do not feel satisfied that we cannot devise simple screens, or a protective lattice. To many persons the grape has become an essential article of food, and in the judgment of many competent authorities there is no more wholesome fruit in cultivation.

Clinton, N. Y.

E. P. Powell.

[Colonel A. W. Pearson writes from Vineland, New Jersey, that thousands of vines which blossomed as freely as usual there will not bear a single grape this year. There will hardly be one-tenth of a crop in southern New Jersey, and he ascribes the loss to heavy rains when the vines were in blossom. Showers fell every day for nearly a fortnight, and during four days, while the blossoms were opening, twelve and a half inches of rain fell. No other cause for the failure to set fruit has been suggested.—Ed.]

"Keep off the Grass."

To the Editor of GARDEN AND FOREST:

Sir,—Whenever I visit public parks and find myself confronted at every turn by the command to "keep off the grass," I have a feeling akin to indignation. City parks are made for the especial comfort of city people, and as city people are compelled to walk forever on pavements of stone the opportunity to set foot on soft smooth turf is to them particularly delightful. I have no respect for the landscape-designer who tantalizes visitors with such a pleasant footing and then forbids them to step on it. If there is any area of grass too precious to be walked on, why not put it away somewhere and fence it off so that it will not be a constant temptation? For my own part I cannot help a feeling that I am not wanted in a park which I cannot use.

The proposition that parks which cannot be used are useless seems to need no proof. These pleasure-grounds, to be worth anything like their full value, ought to be thrown open to popular enjoyment. I never knew a pleasure-ground which was more useful than Lincoln Park, in Chicago, and any one who visits it on Sunday afternoon can see thousands of people sitting and lying and playing on the grass, and in this way getting the interest on the money which they had been taxed to raise for purchasing and maintaining the place. I never saw but one sign-board there which warned people off the grass, and an adventurous citizen was sitting on that. This seemed to me the only good use that such a sign was ever put to. It is true that when ground has just been seeded down it is well to refrain from trampling on it for a time, and in such cases I would put up the warning and state the reason why people

were not allowed to walk on it. But there is no occasion to keep people off established turf, because walking on it does it good.

The privilege of rambling over a stretch of meadow is to me much greater than the pleasure of gazing from a distance upon any effect produced by the landscape-gardener, whether he belongs to the pure and hyper-aesthetic naturalistic school or manufactures chromos of the "Gates Ajar" and portraits of the Father of his Country out of Coleuses and House Leeks. It is time that people asserted their rights in this matter. There ought to be a law in every state that no city could acquire any park-land unless the people were allowed to use and to enjoy what they have paid for.

Buffalo, N. Y.

B. R.

The Island Flower-garden in Jackson Park.

To the Editor of GARDEN AND FOREST:

Sir,—The flower-garden on the wooded island, in Jackson Park, is in happy contrast to others in the South Parks. Conventionality is so obtrusive in cities that it is a relief to get away from it sometimes, and a garden seems a fitting place to be free from its restraints. There are no carpet beds on the island, nor is it a show-place, but it comes nearer being a flower-garden than anything so far shown in any part of the South Park system, not excepting the make-believe old-fashioned garden that used to stand tantalizingly like an inaccessible heaven above the golden stairway, and beyond the dreadful Gates Ajar. That crown of flowers, however, did much to redeem the character of the Chamber of Horticultural Horrors that has for years more or less disfigured Washington Park and depraved the public taste.

The spring of 1894 found the World's Fair out-of-door flower exhibit a thing of shreds and tatters. But the scattered remnants have been carefully husbanded, and already the results are a delight. The border that outlines the wooded island has always been a thing of beauty, and if matters go on as they are going now another year will find the interior in keeping with its setting, or at least well started toward that end.

The lawns are refreshingly green, and the trees and shrubs show well-placed and well-proportioned masses of foliage. Against this background the occasional closely filled beds of hardy Azaleas, Rhododendrons, Pæonies, Irises, Delphiniums, Columbines, Oriental Poppies and the Rose-garden are relieved with good effect. Bold masses of several varieties of Pæonies have been especially good, and the lovely tone of a bed of yellow Irises has been a marked note in the picture.

The Rhododendrons are good, and will probably be better another year when established. They were wintered indoors, and have but recently been placed in the permanent beds. The Rose-garden is enclosed with a low hedge of climbing Roses, just as it was last year, the plants having been left unmolested and unprotected during the winter. The Baltimore Belle and Pride of Washington, of which it is composed, have borne the cold far better than one would have expected. Pride of Washington came through in the best shape, but has lost many of its upper branches. These, however, were injured far more by the wintry spring than by the cold of winter. The climbing Hedge Roses are supported by two wires, stretched on stakes alternately one foot and about two and a half feet high, and they now form a nice little green wall that has been thickly covered with flowers, while great numbers of vigorous young shoots are starting from near the ground. Pride of Washington is evidently a good choice for this latitude, particularly if kept rather low and the tops protected. Enough Roses remained to fill most of the garden, and all have been reset, are doing well, and nearly all have bloomed well.

The wide, irregular border inside the hedge, that was last year filled with tender, ever-blooming Roses, is now occupied by hardy herbaceous perennials; an extensive and varied collection having been formed from odds and ends left over from the Fair. These bits have been gathered carefully and intelligently from every available source by Mr. Lutschy, the Swiss gardener, who was foreman for the Chief of Floriculture, and has since then been in the employ of the South Park Board. No one else could have done the work so well, for he was familiar with the character and location of every exhibit, and now goes about gathering in choice scraps from the grass-plots (where exhibits stood last year), and thus adds valuable material to the hardy border. As, for instance, self-sown seedlings from the remarkably fine collection of hardy Phloxes shown in the English section.

Borders of hardy shrubs and of herbaceous plants, that are planned and arranged with taste and intelligence, are good

things to see and to have. Their permanent character, when understood, must appeal to the public. And the beauty of color, succession of bloom, and the relation of size and character of contiguous plants, as well as the excellence of the general effect of the island's planting, can scarcely fail in time to impress a part of the people with a desire to have something similar on their home grounds.

The inexpensiveness of this style of gardening, as compared with the annual purchase of tender plants, should alone recommend it to a majority of Chicago suburban dwellers, of whom, by the way, there are thousands who thus waste their substance in this reckless fashion.

Chicago, Ill.

Fanny Copley Seavey.

The Cypresses of Monterey.

To the Editor of GARDEN AND FOREST:

Sir,—In your issue of June 20th you allude to the very restricted range now occupied by *Cupressus macrocarpa*, and go on to express an opinion that it is hardly possible to conceive that a tree of such vigorous constitution did not at some earlier period occupy a larger territory, or that it has not been driven to this inhospitable shore by the gradual drying of the California climate which followed the disappearance of the great glaciers of the Sierras, or by the direct action of fire in comparatively modern times. As my own knowledge is confined to herbarium specimens and to comparatively young trees in cultivation, I feel some hesitation in expressing an opinion, but, at any rate, there will be no impropriety in offering a suggestion for the consideration of those whose opportunities are greater than my own. My suggestion is that *C. macrocarpa*, in some form or other, may not really be so limited even now as is generally supposed. For instance, there is the *Farallones Cypress*, from the *Farallones Islands*, which is a near ally, even if not actually a form, of *C. macrocarpa*. Even more nearly allied is *C. Guadeloupensis*, S. Watson—so closely, indeed, that, for my own part, I should refer Watson's species to *C. macrocarpa*. It is more glaucous than the type, and has a facies (as botanists say) a little different from the ordinary *C. macrocarpa*. Such differences are common in the case of insular plants. If this opinion be feasible it strengthens your contention that the tree had once a wider area of distribution that it now has.

London.

Maxwell T. Masters.

The Forest.

Mixed Oak and Beech Forests of the Spessart: Management by the Bavarian Government.—I.

IN 1814 the Spessart was incorporated with the Kingdom of Bavaria. The greater portion of the forests belongs to the state, while a considerable area belongs to a few large private owners. Soon after 1814 attempts were made to introduce a methodical and comprehensive system of management. In 1790 the Oak-woods occupied 21 per cent., Beech-woods 40 per cent., and Oak mixed with Beech 39 per cent. of the forest area. During the wars which followed, and during the occupation of the country by the French, the condition of the forests deteriorated rapidly. Oak-timber was cut recklessly, in order to provide money and to satisfy the requisitions of the invading armies. Even more mischievous was the uncontrolled removal of wood and litter by the people settled in and around the forest. In 1820 the area stocked with Oak had been reduced to 16.4 per cent. Large areas, particularly on the outskirts of the forest and in the northern portion, had been completely devastated, and were no longer in a condition fit to produce Oak and Beech.

Under these circumstances the task to be accomplished by the Bavarian Government was difficult. In the first instance the administration of these estates had to be organized, boundaries defined and marked on the ground, the forest rights had to be inquired into and their exercise regulated, the forest had to be divided into blocks and compartments; it had to be surveyed and mapped, executive and protective officers had to be placed in charge of, and a system of roads for the export of timber had to be built. Apart from this work of general organization there were

three matters of vital importance which demanded immediate attention.

These were (1) the regulation of cuttings as regards Oak-timber;

(2) The measures necessary to reclaim the devastated forest-area; and

(3) The regeneration of the Oak.

THE GROWING STOCK OF OLD OAK-TIMBER SPREAD OVER A LONG PERIOD.

From the outset it was clear that the existing stock of old Oak-timber could not be made to last until the young Oak-woods attained maturity. It will be remembered that there was an almost complete want of middle-aged Oak-trees. The interruption in the future supply of Oak-timber, which is the necessary consequence of this state of things, might be partially bridged over by spreading the consumption of the growing stock of old Oak-timber over a long series of years, allowing the last old trees to attain a very great age. Obviously, however, there is a limit to such a proceeding; for, though the Oak-tree attains a very great age, still, among very old trees, there will always be a proportion whose timber near the centre of the stem is unsound; moreover, the proportion of unsound and hollow stems increases rapidly with advancing age. During the eighty years which have elapsed since 1814, the cuttings of old Oak-trees have been carried on in the most economical and careful manner, so that there is still a large growing stock to draw upon during a long series of years. In order to effect this an elaborate working-plan was drawn up more than sixty years ago, which, however, was made subject to periodical revisions. The last revision was made in 1888, and a statement of some of its provisions may possibly interest your readers.

The Rohrbrunn Range comprises a wooded area of 13,063 acres, and in this area 102,000 large Oak-trees were left standing in 1888. The yield of Oak-timber in cubic feet for five consecutive periods is estimated as follows:

Periods,	1888 to 1911	1912 to 1935	1936 to 1959	1960 to 1983	1984 to 2007
Timber yield, . . .	6,183,000	2,349,000	3,780,000	4,131,000	189,000

The working-plan is prepared for five periods of twenty-four years each, and it will be understood that only the total quantity to be cut during each period is fixed, the detailed arrangements regarding the quantity to be cut each year being left to be settled when the time comes, in accordance with circumstances then existing. All old Oak-trees are registered, and from the figures of the statement it will be seen that there were in 1888 102,000 in the Rohrbrunn Range—namely, 72,000 in the 1,000-acre block on the slopes of the Geiersberg, then about 240 years old, and 30,000 older trees in the rest of the range, mostly scattered among Beech-woods. The older trees will be cut during the first two periods, whereas the Oak of the 1,000-acre block will furnish the main portion of the yield expected between 1936 and 1983—that is, during the third and fourth period. The mean age of these trees will at the time of their fall be 310 years. If cut at the present time the timber would probably not fetch more than thirty marks per cubic metre (35 cubic feet or 420 superficial feet), whereas the timber of trees 300 to 400 years old is worth from two to three times that amount. Thus it is true economy not to contemplate cutting the last of the Oak-timber standing on the 1,000-acre block in the Rohrbrunn Range until nearly 100 years hence.

To some of your readers the notion of providing in a forest working-plan what has to be done 120 years hence, of settling in 1888 what Oak-timber is to be cut between 1984 and 2007, may appear little short of childish. Doubtless, changes may take place before that time; storms may uproot thousands of the trees now standing long before the period assigned for their cutting, and other unexpected events may happen which may upset all previous calculations. So much, however, may be regarded as certain, that an article as valuable as Oak-timber will always command a comparatively high price, hence it is desirable to

take measures to secure, as far as possible, an uninterrupted supply of this article. And it is evident that, in order to secure this result, some sort of forecast must be made for a long series of years, even at the risk that some of its provisions must be modified when this plan is periodically revised. As a matter of fact, ever since 1814 the cuttings and other operations in the Spessart have been regulated by working-plans of this kind, and the present satisfactory condition of the forests has been brought about by arranging the annual cuttings in accordance with the provisions of such working-plans. Generally it may be said, that the heaviest annual yield will be during the first period, because many very old trees, which would otherwise deteriorate, must be cut, and that, although until the close of the fourth period (to 1983) it will be possible to maintain a fairly even supply of Oak-timber, there will be a break then, which will last until the woods now 100 years old have attained those dimensions which will justify their utilization.

Recent Publications.

The Garden that I Love. By Alfred Austin. Macmillan & Co.: London and New York, 1894.

In these days, when so much complaint is heard of the artificiality and excitement of life in cities, any book which sets forth in attractive fashion the genuine happiness to be found in the simple employments of country life needs no excuse for being; and whatever may be the defects of Mr. Austin's little volume, there can be no question that it reflects on every page that true content which can be found by degenerate man only when, escaping from the friction of the world, he endeavors to create for himself some "suburban resemblance" to that pure paradise forfeited ages ago by Adam's fall. Mr. Austin is, perhaps, a little too conscious of his reputation as a poet and literary man to be always spontaneous, but his devotion to rural pursuits is not affected, and his love of his garden and of nature herself is profound and sincere. He notes her changing beauty with an artist's eye and describes it with something of a poet's grace. Nor is he altogether wanting in appreciation of that higher beauty of nature which appeals rather to the soul than to the senses or the intellect.

It is impossible to read these clearly printed and broad-margined pages without comparing the work with Mrs. Robbins' simple story, *The Rescue of an Old Place*, first told in the columns of this journal. The two books are exactly alike in purpose, but with the difference that would be expected between one which treats of the charms of rural life in an old and another which treats of the same life in a new country. Each records a series of experiments by which beauty and harmony were wrought out of something like ruin and desolation, but the scene of Mr. Austin's experiment is a neglected estate in the heart of cultivated England, rich with all the passion of the past; while Mrs. Robbins finds her happiness in rescuing from decay an abandoned farm in prosaic and rugged Massachusetts. Both tell of compromises between history and hope and explain how, by loving labor, "the old may be made to add charm and dignity to the new, while the new lends purpose and meaning to the old," and it may be that because this is the problem, not only of landscape-art, but of life itself, we find in both books, scattered amid more or less practical and trustworthy directions as to sowing and planting and gathering, so many sage criticisms of life and art—a sort of mental harvest which seems to be garnered by every one who, while treating nature and her work with due reverence, assumes control over ever so small a portion of the earth's surface and attempts to subdue it to use and ordered beauty. Both books have the accent of culture, but in Mrs. Robbins' book the note is struck with the firm touch of one to whom life is more than books, the body more than raiment, while in *The Garden that I Love* we hear the somewhat languid tone which results when culture is sought as an aim in

itself rather than as an adornment of life. The one book has an indolent Old World charm inseparable from the story of a mansion whose life has been connected with the history of many generations of men, while the other breathes throughout the fresh and bracing atmosphere of a new world, where antiquity is less impressive and oppressive. Mr. Austin does not seem to have that simplicity of character which enables a writer to be personal without a touch of egotism, nor the rich sense of humor which can often render even egotism itself delightful, but he has an observant and sympathetic eye for outdoor beauty, and the reader will find many delightful passages which show the touch of true poetic feeling. Here is one:

Autumn, I grant, knows the art of gardening to perfection, and possesses the secret of careless grace even beyond the spring. There is an orderly negligence, a well-thought-out untidiness about autumnal forms and colors no other season can match. Even to the garden proper, the cultivated plots of man, autumn adds such wonderful touches of happy accident, that when it comes—really comes—a wise man leaves his garden alone and allows it to fade and wane, and slowly, pathetically pass away, without any effort to hinder or conceal the decay. Indeed, it would be worth while having a cultivated garden if only to see what autumn does with it.

Notes.

According to a dispatch in *The Tribune* of this city, a small seedless grape, known as Lady de Coverly, and said to be very sweet and refreshing, is the first variety which has been shipped from the Pacific coast. Some of these started eastward last week from Palm Springs, a valley on the edge of the Colorado desert. They would have been shipped a fortnight ago but for the railroad strike.

According to the *Weekly Press*, of Pretoria, in South Africa, forests are being as ruthlessly destroyed in that region as in our own country. "The destruction of trees for fuel," we are told, "has been carried on so long, and with such a reckless disregard for the future, that there is now good cause for alarm. The timber in the Waterberg districts is not nearly so thick or of such value as a casual observer would believe, and the cutting here and in the Woodbush is going on so promiscuously and without any replenishment that the end of the splendid timber-supply in the northern districts must soon come."

It is estimated that 52,236 tons of teak-wood were cut in lower Burma in 1889. The Teak forests of the upper part of the province, however, are more extensive and important, and in 1889 produced not less than 139,500 cubic tons of teak. The trade shows no signs of diminution, notwithstanding the many rival materials with which teak-wood has now to contend, so varied are the purposes for which it is adapted. Teak is used in ship-building for decks and lower masts, railway carriages, the construction of bridges, for furniture and house-building. It is found particularly well suited to back the metal-plates on iron-clads, the resinous matter which it contains acting as a preventive against rust.

A correspondent of *The Country Gentleman* writes from Delaware that among Red Raspberries grown there a local variety known as the Miller is finding great favor. In size the berry averages about as large as that of the Cuthbert, which is the main market variety in that section, but it has a smaller core, and therefore bears shipment better. It ripens with Thompson's Early, and will bear twice as many berries at each picking, and it continues longer in fruit. Besides its lack of productiveness, Thompson's Early yields berries which crumble easily, and Royal Church seems to possess the same bad quality. The cane of the Miller Raspberry is quite hardy, and from the present accounts it seems to be the most desirable market berry which has yet fruited on the peninsula.

The Department of Agriculture has sent out a circular concerning Hungarian Brome Grass, *Bromus inermis*, which contains a figure of the plant and such facts as are known of its habits and value. Inasmuch as the plant is of comparatively recent importation the circular is accompanied by questions, the answers to which, it is hoped, will furnish the department with a record of the experience of persons who have tested it, so that its adaptability to various sections and different purposes in this country may be better understood. It is said to be good for holding the banks of ditches and

strengthening the turf on sandy soil, and in regions subject to extremes of heat and long drought and in light soil, or where the land is not adapted to the growth of finer grasses, the plant is cautiously recommended for trial. It might have a real value in a permanent meadow or pasture, and especially in the south, for winter grazing. On lands where frequent rotation is practiced or desired, care should be taken that it does not become a weed almost as troublesome as the Couch Grass.

In the third volume of *The Industries of Russia*, translated by John Martin Crawford, United States Consul-General to Russia, a Turkestan garden is described as a portion of land surrounded with a high clay loam wall, along which are planted Poplar and Willow trees. The land is devoted to Lucerne, Melons, Water-melons, or more rarely vegetables, or it may be planted with Grapes, Apricots, Peaches, Mulberries, and more rarely Quince, Pear, Plum, Apple and Fig trees, all these being set without any fixed plan. A large plantation of Poplar or Willow is very often to be found in gardens, where these trees are grown for the sake of their timber, as well as for the fuel they furnish. Under the thick foliage of the older trees, the Elm, the Plane, the Apricot and the Mulberry tree, the natives are wont to fence off a small space where carpets are spread on hot days and where they take their rest or siesta. The selection of flowers which are occasionally grown in these gardens is very limited. Sweet Basil (*Ocimum basilicum*), the favorite plant throughout Central Asia, garden Balsam, from which is prepared a red dye for the nails, the Mallow, the Marigold, the Lady's Comb (*Celosia*), and more seldom Dog Grass and the Aster, are plants almost always found in the garden.

The market season for raspberries is practically over, and the few which remain are of small size and low quality, as are blackberries and huckleberries also. The widespread drought has brought the supply of these small fruits to an untimely end, while currants, and even large orchard fruits, such as apples, have been seriously affected. The leaves of Corn are curled, and gardens over a large part of the northern Atlantic states, where irrigation is not practicable, are parched so that vegetables as well as fruits show the effects of drought in poor quality and diminished quantity. A few fine gooseberries sell for twenty cents a quart. The first Delaware grapes have arrived from South Carolina, and they brought thirty-five cents a pound. Peaches from Maryland, Delaware and the few coming from New Jersey are altogether inferior, but owing to the scarcity of all fruits hereabout and the total absence of the supply from California for nearly a month, prices are very high, and peaches, which in other seasons would hardly have been considered marketable, now bring two dollars and fifty cents a basket, while those of a larger size, from Georgia, sell in the fancy-fruit stores at two dollars for a box holding a dozen and a half. A few Bartlett pears are coming from Virginia, evidently picked to reach a bare market as early as possible. Wild goose plums, from Delaware and Maryland, sell at twelve to fifteen cents a quart at retail. A chance car-load of Peach plums and Tragedy prunes came through from California last Friday, and although the fruit was in poor condition from the protracted journey, the car-load realized above \$3,000. Sweet Bough and Astrachan apples, from Long Island, are becoming more plentiful and cheap. Muskmelons are abundant, but good ones are costly, some Jenny Linds of first quality, from Maryland, commanding two-dollars and fifty cents for a basket of eighteen melons. Two hundred and forty car-loads of water-melons came from Georgia and South Carolina during last week. In fact, watermelons are so abundant that wholesale prices are quoted by the car-load as often as they are by the hundred. A good car-load brings as much as \$250. New limes are coming from Jamaica, and there are small supplies of grape-fruit from the same island. Besides the Rodi oranges, which constitute the main summer supply, an occasional box of King of Siam and other late oranges arrive from Florida, and, of course, bring excellent prices. The large number of 125,000 boxes of lemons were sold in this city last week at fair prices, and bananas also continue to arrive in enormous quantities, the receipts this month being even heavier than in June, when more than half a million bunches were received in this city. The season for bananas from Cuba begins with March and closes in October. Nearly half of the supply now comes from that island, principally from the port of Gibara, the winter supply coming from more southern latitudes. An effect of the general scarcity of fruit is noticed on the streets, where fruit-stands are less numerous and less bountifully supplied than in recent years.

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Forestry in the Land-grant Colleges.

EVERY thinking man knows that this country is already suffering serious loss, and that we are inviting incalculable loss in the future by neglecting to provide any systematic management for our public forests or private woodlands. Not only is there no system, but there is no realization of the fact that we need any system, and the men who control our timber-supply keep on in a happy-go-lucky way, getting the most out of the woods that seems possible to-day, and trusting to luck for to-morrow. No doubt, the country will awake some time, as its needs become pressing, and there will be a demand for skilled foresters, but just where the supply of competent men is to come from is not so clear. To-day it would not be easy to find men who can be trusted to manage a large forest-property to the best advantage; to manage it—that is, in such a way as to secure from it the most remunerative output now, while, at the same time, its productive capacity is not only kept unimpaired, but steadily increasing. Of course, any man of ordinary intelligence and executive force could improve on our present practice, but the men whose knowledge and experience are sufficient to manage our forests to their highest profit as permanent sources of supply are few and far between.

In other countries there are forest experiment stations established by the Government, where investigations are constantly in progress which will add to the knowledge of the various subjects included under the comprehensive term of forestry, and there are schools in which persons are trained in its theory and practice. Even if it were advisable to establish schools of that sort in this country, we have no corps of teachers capable of giving proper instruction, and no well-managed forests to serve as examples. But there is much elementary knowledge which can be acquired without any course in a French or German forest-school, and there seems no reason why the rudiments of the science and art of forestry should not be taught in our agricultural colleges. The state has endowed these institutions, and they are supposed to afford

instruction in various departments of agriculture as well as in horticulture, including pomology and even floriculture, and this, too, although the Government does no farming or gardening. On the other hand, the Government does own large tracts of timbered land, many of which are already set apart as reservations, and there is little doubt that other portions of the public lands which are forest-clad will ultimately be left under the control of the General Government, so that, to a certain extent, the Government will manage its own forests. There is a special reason, therefore, why the Government should assume to provide expert training for the care of its own property in this way.

A few of the land-grant colleges recognize the subject of forestry as one of the branches included under the head of agriculture, and it is worth while to inquire how much instruction is actually given at these institutions. Professor C. S. Plumb, of Purdue University, has collected some data from their current publications on this point, which he has kindly placed at our disposal. From these data we learn that not a single reference to forestry is made either in the catalogues, registers or reports of the agricultural colleges in the following states: Alabama, Arizona, Arkansas, California, Delaware, Florida, Georgia, Idaho, Louisiana, Maine, Maryland, Nebraska, New Jersey, Tennessee, Virginia, West Virginia, Wisconsin and Wyoming. In Colorado a portion of one term of the junior year is devoted to this subject. "Lectures are given on gathering and preservation of forest-tree seeds, planting of the seeds, care of seedlings and the value of trees for timber and ornament, for hedges, screens and shelter belts in this state." In Storrs Agricultural School, in Connecticut, forestry is said to be taught with botany and horticulture, but to what extent is not stated. "Some acres of the college-land are covered with a growth of young trees, which will afford an opportunity for the present to illustrate the methods of pruning forest-trees and the management and preservation of forests." In the Illinois University there is a course in forestry which embraces a "study of forest-trees and their uses, natural distribution, and their artificial production." The relations of forest and climate are studied, and the general topic of forestry legislation and economy are discussed. In Purdue University, Indiana, three hours a week, for eleven weeks in the spring of the senior year, are divided between forestry and landscape-gardening. In Iowa Agricultural College, "during the second term of the senior year a general view is taken of the influence of horticulture and forestry on the civilization of the earth and the health and comfort of its inhabitants." Three hours are devoted to this a week. There are "forestry plantations" which are among the means of practical illustration. The Kansas Agricultural College has among its illustrative material "a forest plantation of twelve acres, containing twenty varieties of from one to twenty-five years' growth." In the Kentucky College forestry is included as one subject of instruction under the head of economic botany. In the Massachusetts College instruction is given two hours a week for the fall term and three hours a week for the winter term in senior year. It is added that a large forest-grove is connected with the horticultural department, where methods of pruning trees and the management and preservation of forests can be illustrated. During the spring term of this year, Mr. B. E. Fernow, Chief of the Division of Forestry of the United States Department of Agriculture, delivered a course of twelve lectures before the senior class. In Michigan Agricultural College the seniors may elect to devote their year to the elements of forestry, the first three weeks being given to an examination of the indigenous trees of the neighborhood and the remainder of the term devoted to lectures and reading. There is an arboretum of nearly two acres, which was begun in 1877, and which contains about one hundred and fifty species of trees. In Minnesota, during the first term of the third year, lectures on forestry are given three times a week. There is a post-graduate course in horticulture at the Mississippi College, which includes work in

forestry. In Missouri, lectures are given three times a week during the third year, with required readings on forestry, and it may also be an elective study. In Nevada, forestry is taught by "lectures and the use of the best literature that can be obtained" for five hours a week during the third term of the senior year. In New Hampshire forestry is included under work in botany, and during the winter of 1893 a course of lectures on forestry was given by the members of the New Hampshire Forestry Commission. In the College of New Mexico "instruction is given on the effect of trees on climate, etc." In Cornell University the subjects of arboriculture and forestry occupy two hours a week in the spring term. In North Dakota, in the third term of the sophomore year, five hours a week are given to the subject of forestry for four weeks. The Ohio State University offers a course in horticulture and forestry, and three hours a week are devoted to this subject during one term of the senior year. Instruction in forestry is given in the Pennsylvania State College by lectures, in connection with Hough's *Elements of Forestry*, during one session of the senior year. Two small artificial plantations of trees are maintained on the place, and there is a large experimental tract on an adjacent mountain. Four hours a week are devoted to forestry and landscape-gardening during one term of senior year at the Rhode Island College. In South Dakota there are lectures on the propagation and planting of forest-trees and the study of the habits and characters of the trees best suited to that state. The lecture work is supplemented by practice work in the forest plantation of the college-grounds. The subject is taught two hours a week in one term and three hours in another term of the junior year. In Texas, Hough's *Elements of Forestry* is studied two hours a week during the winter term of the fourth year. In Utah forestry is said to "receive considerable attention." In Vermont instruction is said to be given in forest-planting. This is part of the work on "fruit-culture, landscape-gardening and forestry," which occupies three hours a week during half of junior year.

These details are somewhat tedious, perhaps, but they show pretty clearly to what extent the colleges founded by Government bounty are helping the cause of forestry. It is safe to assume that forestry is not considered of much importance in those institutions whose year-books make no allusion to it whatever. It may be that in the other colleges students receive more instruction than one would infer from the promise in the published curriculum. But where only two or three hours a week are devoted to forestry during one term of a single year, and in institutions where it is considered a branch of landscape-gardening or one of the minor divisions of economic horticulture, we can hardly expect the student to make any remarkable progress. It is encouraging to note that some of the college-farms have forest-plantations, and the subjects of Mr. Fernow's lectures at Amherst College, which we have already published, show that even in a brief course the fundamental problems which confront the pioneers in scientific forestry in America can, at least, be stated, and the methods of attacking them can be outlined. The season for the meeting of various scientific associations is at hand, and the leading instructors in many of these colleges, as well as the officers of the experiment stations, will meet in council. Perhaps it may be worth while for them to inquire in what way, and to what extent, these Government institutions can be made efficient in promoting the cause of forestry.

Wayside Plants in the Pines.

DURING the last few years I have noticed many foreign plants that have become thoroughly naturalized along our waysides in the Pines, where they are making a strenuous, and often victorious, fight for life with our native species. Many of our indigenous plants will not long survive when the woods are cut away and nothing is left to shelter them from the hot sunshine of our dry summers,

and when to these trying conditions are added direct attacks of foreign plants, which crowd them and rob their roots of food and moisture, their extermination is more rapid. Among the most showy of these naturalized plants is a Hawkweed, *Hieracium aurantiacum*, bearing a clustered bunch of deep orange flowers. It is hardy, full of life, and spreads rapidly from seed and runners. Some three years since I took two or three plants from the roadside and planted them in my garden, where they so quickly overran a large area that I was forced to restrain them from becoming dangerous weeds. At the same time I transplanted a few of our own Hawkweeds, among them the slender and delicate *H. venosum*, but it did not appreciate the kind treatment, although it grows naturally in dry sandy places. Another foreign plant that I have recently observed is a *Salvia*, which grows in strong, dense clumps, with long branching spikes of quite showy deep blue flowers. The ample radical leaves, ten to twelve inches in length, look fresh and vigorous when other plants are withering in the present drought. It answers to the description of *S. verbenacea*, with the exception of the leaves, which are never lobed or incised in the least. I think, however, that it is this species.

The Bladder Campion, *Silene Cucubalus*, is another European plant growing with our native starry Campion, *S. stellata*, with its large open panicle of pretty fringed flowers. The beautifully veined, inflated calyx of the Bladder Campion is its chief attraction. *Galium Mollugo* is a handsome plant, growing luxuriantly along grassy roadsides and in fields. It has long panicles of small white flowers, which are fragrant and very abundant, while the stems are thickly set with whorls of small deep green leaves. Our own *Galiums* will not grow where this aggressive foreign species makes itself perfectly at home. Hall's Japan Honeysuckle, *Lonicera Halleana*, is another rampant grower in this soil which it is almost impossible to keep within bounds. The seed is carried by birds, so that it has become established in many places along the roadsides and on the edge of woodlands. It has the merit of being a handsome climber. The Lucerne, *Medicago sativa*, is also taking possession of the roadsides and waste places, but as this is a good forage-plant it will be welcome to farmers and herdsmen. The Ox-eye Daisy is becoming as great a pest here as it is in the older-settled portions of the country; so also is the showy Toadflax, *Linaria vulgaris*. Were it not for the disagreeable odor of this plant it might be utilized, like the Daisy, in bouquets, but the entire plant is so offensive that it is as little welcome to the flower-gatherer as it is to the farmer. The common Carrot, too, is very abundant on the waysides where it is allowed to grow, but as it is a biennial it can easily be kept in check by mowing before the seed ripens.

The European Clover-Dodder, *Cuscuta Epithymum*, has recently invaded the Clover-fields here, and threatens disaster to that crop. It is a slender, delicate, parasitic plant which tightly hugs and soon smothers its host, so that the Clover looks as if a fire had passed over it. It blossoms considerably earlier than the native species. The flowers are in small clusters, pure white and quite fragrant, attracting many insects. Like our own Didders, the plant starts from the ground, but soon dies at the base, and then draws its entire nourishment from its host.

Among our own plants that still cling to the waysides we find many in the Pulse family. One of the most handsome is *Tephrosia virginiana*, with large white and pink pea-shaped flowers. Another is the Wild Indigo, *Baptisia tinctoria*, a round-topped, bushy plant, and when covered with bright yellow blossoms it is quite pretty and showy. The false Indigo, *Amorpha fruticosa*, also grows on the roadsides, a shrubby plant with dense terminal spikes of small purple flowers. The wild Lupine, too, is very common, with a long showy raceme in varying shades of purple, and there is also a pink variety. The Rose Acacia, *Robinia hispida*, has also become a roadside shrub, and its handsome deep rose-colored flowers are always wel-

come. The Ground-nut, *Apios tuberosa*, twines and clambers in masses over the wayside shrubbery wherever the ground is moist. *Cassia Chamæcrista*, sometimes called the Partridge Pea, and *C. nictitans*, the wild Sensitive-plant, are both common, as are many other less noticeable plants in this family.

Other families also give us showy hardy plants, as the Butterfly-weed, *Asclepias tuberosa*, with large umbels of deep orange flowers. But one of the most striking displays in gorgeous yellows that I ever saw was this summer near an old country road. This was a kind of Tickseed, *Coreopsis auriculata*, and the plants stood so thickly that they had crowded out everything else for a number of rods. They were in full flower, and ran from the road along the edge of the woods which skirted an old deserted field. Examination showed that this was once the site of a garden, as was proved by a gnarled old Apple-tree and a stunted Lilac-bush which still remained. No doubt, the original *Coreopsis* had been planted here as part of the old-time flower-garden, and had proved its vigor by occupying and possessing this abandoned territory.

The Swamp Rose, *Rosa Carolina*, is seen everywhere in damp grounds, blooming all summer, as does also the dwarf *R. lucida*. Many handsome plants in the Heath family may still be seen along the country roadsides—*Clethra* and the *Andromedas* and *Kalmias*.

Vineland, N. J.

Mary Treat.

Foreign Correspondence.

London Letter.

"LES ORCHIDÉES."*—The comprehensive work on Orchids which I stated last year was in preparation by Monsieur Lucien Linden, the managing director of L'Horticulture Internationale, Brussels, is now published, and from what I have been able to see, in a hurried glance through its thousand and odd pages, it is likely to more than fulfill the expectations of those who know Monsieur Linden and his capabilities as a writer upon and cultivator of the great Orchid family. The history of the early collecting exploits of Monsieur Linden, père, the well-known John Linden—who, by the way, is still actively interested in the work of the famous Brussels nursery—is both useful and entertaining, as also are the particulars of the natural conditions under which many of the most important Orchids grow wild. There is plenty of botany as well as history in the book, which consequently contains much instructive matter for those who are only interested in Orchids botanically. Probably, however, its chief value as a contribution to the literature of Orchids is in those parts which deal with the cultural requirements of these plants. On account of the position he has held and the extraordinary success he has achieved as a grower of Orchids, Monsieur Lucien Linden is pre-eminently qualified to speak with authority on their cultivation. The general principles which govern the cultivation of all plants are pretty much the same in all countries, although in matters of detail there is often considerable difference. But every cultivator can find useful information in the chronicles of others, just as he does in observing their methods, and in the details given by Monsieur Linden the most experienced Orchid-grower in other lands than Belgium cannot fail to find valuable hints. The work is well illustrated and printed on good paper, its price being twenty-five francs.

VANDA ROEBLINIANA.—This is a new species now flowering in the nurseries of Messrs. H. Low & Co., Clapton, by whom it has been introduced, and who have named it in compliment to the Hon. C. F. Roebing, of New Jersey. It has the habit of *V. cœrulea*, and bears several slender drooping scapes about nine inches long, each with half a dozen flowers about an inch and a half in diameter; pedicels two inches long, sepals and petals equal, spreading narrow an inch long and colored chocolate-brown, with yellowish

lines and spots; lip spatulate, with a long narrow claw, broad at the apex, which is flat, two-lobed, fringed and colored like the petals, paler on the basal lobes. It is distinct from all other species in its long, slender, stalk-like claw and the flat spreading apex of the lip. Although not attractive in color, it is not without interest horticulturally. It was awarded a botanical certificate on Tuesday.

LÆLIO-CATTLEYA TIMORA.—Messrs. J. Veitch & Sons exhibited this week and obtained a first-class certificate for a new hybrid under the above name, which they had raised from *Cattleya Luddemanniana* crossed with *Lælia pumila* Dayana. It is a dwarf plant; indeed, it might almost be called an exceptionally vigorous *L. pumila*, with flowers half as large again of a deeper color, and the large lip of a deep maroon crimson. It is a very handsome and worthy production.

DISA DIORES.—This is a hybrid between *D. grandiflora* and *D. Veitchii*, also exhibited by its raisers, Messrs. J. Veitch & Sons, and although it did not obtain any special notice, it is likely to come into prominence as a cool-house Orchid; its large flowers are pale in color, with an orange-tinge on the lower sepals. The plant shown was small and weak and bore only one flower.

SONERILA MRS. H. WALTER.—This hybrid between *S. maculata* (orientalis of gardens) and *S. Hendersoni*, a seedling form of *S. margaritacea*, was shown this week in fine condition by Messrs. F. Sander & Co., and was awarded a certificate for its large richly variegated foliage, in which respect it rivals the *Bertolonias*. Its leaves are six inches long and four inches wide, dark olive-green, thickly spotted all over with white. Although a common plant in various parts of India, *S. maculata* does not appear to have ever been in cultivation until it was introduced and distributed by Mr. Bull under the name of *S. orientalis*. It is a pretty little foliage-plant, and, in addition, is attractive when in flower. It grows to a height of about nine inches and blooms profusely in early winter, the color of the flowers being bright pink. The cross between it and the well-known *S. Hendersoni* is a very promising plant.

PHILADELPHUS LEMOINEL.—If this plant is not grown in American gardens—and I do not see it mentioned in Mr. Jack's interesting notes on cultivated species and varieties of *Philadelphus*—permit me to give it a strong recommendation as a shrub which is quite hardy at Kew, grows freely and flowers most profusely in June and July. It was raised by Monsieur Lemoine, of Nancy, about six years ago from *P. coronarius* and *P. microphyllus*, and it is as attractive and useful a little shrub as one would expect from such a union. We have several beds of it at Kew, and it has flowered almost too freely for its own good this year. *P. microphyllus* has done well here also, and, in my opinion, is a most delightful little plant for a small bed or group in a sheltered sunny position. It was severely hit by a heavy frost experienced at Kew two years ago.

ROSA GIGANTEA.—Mr. E. D. Sturtevant is to be complimented on being the first to flower this Burmese beauty among the many expert growers who have essayed its cultivation. But there is a hitch somewhere, the smallness of the flowers produced in America being disappointing. We must, however, bear in mind that in Burma this Rose is a gigantic climber, covering large trees with its stout branches; probably, therefore, the undersized flowers borne by Mr. Sturtevant's plant are the aborted product of a weakling in too great a hurry to reveal its flowers. Certainly the dried specimens of this Rose bear out the statement of those who have seen it in the Shan states and describe its flowers as large shallow cups, pure white and six inches across. At Kew the plants grow with great vigor, but they show no signs of flowering, and the same is true of a plant in the garden of Mr. Thomas Hanbury, at Ventemiglia, near Mentone.

COTINUS COTINUS ATROPURPUREA.—This shrub is attractive with us now, the purplish color of its feathery-like flower-heads being much more striking than the type, in which the flower-heads are green. It was distributed several

* *Les Orchidées Exotiques et leur Culture en Europe.*

years ago by Messrs. Lemoine & Sons, Nancy, and is already becoming a favorite shrub in English gardens. There are several groups of it at Kew, and Messrs. J. Veitch & Sons exhibited a nice example of it last Tuesday.

LILIUM ELEGANS, var. HORSMANI.—There are already many named varieties of the Japanese *L. elegans*, more commonly known as *L. Thunbergianum*, and in this distinct form named in compliment to the late Mr. Fred Horsman we have a recent addition. It was shown last Tuesday by Messrs. R. Wallace & Co., Colchester, and obtained a first-class certificate. Its stems are only about a foot high, but the flowers are large and of a deep brown-crimson color, with dark brown spots.

RUBUS JAPONICUS, var. TRICOLOR.—This likely little shrub, which Messrs. J. Veitch & Sons introduced from Japan, obtained a first-class certificate last Tuesday on account of its prettily variegated foliage. The leaves are smaller than in the type, and they are variously colored white, rose or green, or a mixture of all three. Its variegation is likely to render it more delicate than the type, although I learn that it is quite hardy at Combe Wood.

SUMMER BEDDING.—Kew is setting a good example to those who believe in a large use of the Scarlet Geranium and such plants for color-effect in the garden during the summer. The work is simplified by using only one color, one kind of plant, in fact, for each bed, and the effect, in a large garden, at any rate, is more pleasing. The large beds which skirt the principal promenades are filled each with a good Geranium (*Pelargonium*) or *Calceolaria* or *Heliotrope*, and they are a great improvement on the intricate and carpet-rug-like design which used to be worked out with many kinds of plants in the old days. These breadths of brilliant color are, of course, indispensable.

London.

W. Watson.

New or Little-known Plants.

Spiræa bracteata.

THIS handsome Japanese plant is an addition to our shrubberies of real value. It is a shrub two to three feet high with bright red twigs, ovate to obovate or nearly orbicular leaves, entire below and coarsely serrate with a few teeth above the middle, bright green on the upper surface, paler on the lower, and one-half of an inch to an inch in length. The flowers, which are white and are arranged in rounded corymbs terminal on short leafy branches of the year, are produced in the greatest profusion. The species is easily recognized by the bract, to which it owes its name, and which is borne near the middle of the pedicel of the flower. On the lower pedicels of the inflorescence it is leaf-like and often half an inch long, gradually growing smaller on the upper pedicels, and becoming filiform on the uppermost (see page 305).

In Japan, *Spiræa bracteata* appears to be confined to the central mountainous regions of the main island. There are specimens in the herbarium of the Arboretum received from the Science College of the Imperial University of Japan collected on Fugisan, and two years ago I found it at an elevation of 4,000 feet above the level of the sea by the side of the road leading from Nikkō to Lake Ymoto.

Spiræa bracteata was first introduced into English gardens by Von Siebold, and in the catalogue of his plants sold in Leyden in 1882 it appeared, without description, as *Spiræa rotundifolia*, flore albo. Two years later it was described by Zabel (*Gartenzeitung*, iii., 496) as *Spiræa bracteata*, the oldest published name. Two years later Maximowicz received the same plant from the Japanese botanists Tanaka and Yatabe, and described it as *Spiræa Nipponica* (*Mél. Biol.*, xii., 455), a mistake which he rectified on page 934 of the same publication.

Spiræa bracteata was first received at the Arboretum in 1891 from the Experiment Station at Ottawa, and subsequently from the Forest School of Munden, where Dr. Zabel has paid special attention to the cultivation and

breeding of the different members of this genus. It is perfectly hardy here, flowering about the middle of June, and has so far proved itself one of the most beautiful and satisfactory plants of its class.

C. S. S.

Plant Notes.

ROSE MADAME GEORGES BRUANT.—This valuable Rose was introduced several years ago, but is not yet widely known. It is a hybrid of *Rosa rugosa*, and resembles its Japanese parent in many respects. The leaves are of a rather light green, and, though handsome, are quite inferior to those of *R. rugosa* in color as well as in the peculiar crimping of the upper surface. The growth of the hybrid is extremely vigorous, and in a few years it reaches what may, without exaggeration, be called an enormous bush with thick, spiny, erect branches. The flowers are an almost pure white, large, flat and nearly, but not entirely, double. They have a very delicate fragrance and keep well in water. The plant is perfectly hardy in New England, and produces a first crop of flowers in June in great profusion. Not less than two hundred flowers have been picked from a single plant. They are produced during the whole summer in quantity sufficient to supply a household. The Rose is not much attacked by insects, but is in this respect not as fortunate as *R. rugosa*. All things considered, this hybrid is a really useful and valuable plant. With respect to insects, Dr. Wolcott Gibbs writes that he has used for years with the greatest success a solution made by putting two tablespoonfuls of powdered white hellebore and one of Californian Dalmatian insect-powder into a five-gallon vessel, filling with boiling water, and allowing the whole to stand overnight. The liquid is to be strained through cheesecloth, and then applied with a rose-syringe to both surfaces of the leaves. Two applications are sufficient for a whole summer.

ROSA POLYANTHA REMONTANT.—We have several times called attention to the useful Roses which were introduced a few years since as *R. polyantha remountant*. These, it will be remembered, have flowered in ninety days from seed. In their third year these plants continue to be perfectly hardy, and make well-branched bushes some two feet high. These have double and single flowers of various colors, whites and reds. The single pinks are, perhaps, the most effective. They are of the true remountant habit, giving a most abundant show of flowers in the early year, at which time they are of striking beauty in any collection of plants; later they give occasional smaller crops.

CLEMATIS COUNTESS OF ONSLOW.—In the last issue of the *London Journal of Horticulture* is a portrait of this new hybrid, which is interesting because its pollen parent is one of our native species, *Clematis coccinea*, a Texan plant, which is, nevertheless, hardy as far north as New England. The seed parent of the new plant is *Star of India*, one of the garden forms resembling in form the well-known *C. Jackmanni*, and one of the section which bears great numbers of flowers on the shoots of the current year. The flowers of *C. coccinea* are solitary, shaped like a bell, although constricted near the mouth. They are an inch long, with thick leathery perianth divisions strongly reflexed at the extremities. The flowers of the hybrid show their descent from *C. coccinea* in being somewhat trumpet-shaped, with a broad opening. In color they are bright purple, with a scarlet band down the centre of each petal. Since *C. coccinea* begins to flower in June and continues without interruption until frost, it would be interesting to know how this constantly blooming habit affects the new plant. Most of the large-flowered garden hybrids have proved very unsatisfactory of late years, being subject to a mysterious disease which carries them off without warning, so that they are not planted to so great an extent as they formerly were. We have so many good species, however, such as *C. vitalba*, *C. crispa*, *C. flammula*, *C. graveolens*, *C. paniculata*, *C. Virginiana* and many

more, that they are not greatly missed in outdoor cultivation. The flowers of these species are all so distinct that they offer great inducements to experimenters in hybridization.

CEPHALANTHUS OCCIDENTALIS.—The Button Bush is a native shrub which is found throughout the entire width of the continent and in eastern Asia, too, in marshy places, or often where its roots are constantly under water. When planted, however, on dry ground, like many other plants that are naturally found in wet places, it seems to thrive almost or quite as well. No one, when gathering a wild bouquet, would pass it by without taking some of its sprays, for its pointed leaves are clean and bright, and its perfectly spherical heads of white and fragrant flowers, from which

as the blossoms of our native Chestnuts are fading, and its upright panicles of bladdery fruit are already making it conspicuous in another way. It is a perfectly hardy tree, but for some reason single limbs occasionally die back to the trunk in a hard winter. So far as our observation goes, this disaster has always come upon trees planted in very rich ground. Still, this may not be the cause. The spreading branches of the tree and its large compound dark green leaves make it interesting during the entire season. There is considerable variation in the color of its flowers, which are borne in large panicles, the best of them being a rich yellow. The fruit also varies in color, some of it being a bright green, others tinged with dull red, and others still a deep purplish bronze. The tree comes from northern China, but the



Fig. 50.—*Spiraea bracteata*.—See page 304.

the slender styles stand out like rays in every direction, poise gracefully at the ends of the branchlets. Nevertheless, for some reason this has never been classed among ornamental shrubs. We have been so accustomed to see it running wild, perhaps, that it may seem out of place in cultivated grounds, but it certainly would look at home on low ground, and especially on the margins of pools or brooks in company with Dwarf Willows and Alders. It makes a stout shrub eight or ten feet high, and the fragrant flowers, which are much sought for by bees, remain open for a long time.

KÖLREUTERIA PANICULATA.—This tree has a decided value for ornamental planting because it flowers in midsummer after most other trees are out of bloom. It begins to flower

seeds readily germinate where they fall on the ground in this country, so that it is becoming naturalized in some places.

ODONTOGLOSSUM CRISPUM MIRABILE.—This plant, which originated in the famous collection of Baron Schroeder, and was certificated by the Royal Horticultural Society something more than a month ago, is, without doubt, a natural hybrid between *O. crispum* and *O. Lindleyanum*. According to the *Orchid Review*, the shape of the lip and crest, as well as of the wings of the column and arrangement of the blotches, all show unmistakably the influence of *O. Lindleyanum* and the characters of *O. crispum*. The flower is three inches across, the petals of an ivory-white color when first opening, and afterward of a pure white, while

the blotches are of cinnamon-brown. About two-thirds of each sepal are occupied by what seems to be two or three large blotches which have run together, and the petals have one large blotch above the middle and two or three small ones near the margin below.

Cultural Department.

Notes on Trees and Shrubs.

SOME correspondence has recently appeared in two or three of the Boston newspapers regarding the Woad Waxen, Dyer's Broom, or *Genista tinctoria*, as it is known botanically. This plant is an introduction from Europe, and probably it is not to be found growing so naturally and abundantly anywhere in the United States as in the region about Salem, Massachusetts, although it is also said to have become naturalized in eastern New York, and may be found in other isolated patches.

The newspaper correspondents have expressed the fear that the plant is likely to become a most troublesome weed if it is too freely planted in new localities, and the suggestion has been made that its spread should be checked. There may be cause for this apprehension, although, when compared with some obnoxious weeds, this plant seems slow in disseminating itself. Considering that it is more than two centuries and a half since Governor John Endicott was popularly credited with having introduced it into the colony at Salem, the area now covered seems relatively small. As proof that the plant has been long established we read in Dr. Jacob Bigelow's *Plants of Boston and its Environs*, published in 1815, that "this plant has overrun the hills on the south side of Salem, so as to give them in the month of July an uniformly yellow appearance at a distance." *Genista tinctoria* is also mentioned by earlier writers. At the end of June and in the early part of July, when the Woad Wax is in full bloom, some of the Essex County hills present a most beautiful sight with their covering of rich yellow color. Here the plant has taken almost complete possession of the ground, few other flowering plants ever gaining and holding a place with it. It is not easy to eradicate the Woad Wax when once it gets firmly established in the soil, especially where it is so rocky as the region of its present home. Few animals care to eat it while other vegetation is to be obtained, so it generally remains comparatively unmolested in the pastures.

The means of natural distribution of the plant seem to be few. It may throw its small, hard and heavy seeds several feet by the sudden opening of the ripe pods, the seeds may be washed along hill-sides by heavy rains, or they may be carried considerable distances by browsing animals, by rodents, or possibly by birds, and be left in places where they can germinate and grow. It spreads also by the roots, so that a single individual may ultimately cover a good-sized piece of ground. The plant is likely to be found in abundance in other parts of the country before many years have passed. The popular admiration for its blossoms and an erroneous idea that it is free from disfiguring diseases have caused the Woad Wax to be distributed largely both in the form of plants and seed. It has been planted in parks, cemeteries and private grounds in different states. In such new localities it would be well to watch it and guard against its spreading where undesirable.

It has been suggested that the state undertake the extermination of the weed, but such an unwise course is not likely to be seriously considered. The state's experience in the case of the gypsy moth has convinced many persons of the folly of special legislation of this nature and under such conditions, and some of those foremost in advocating the work are now glad to be rid of responsibility for it.

One writer, after referring to the danger of allowing the *Genista tinctoria* to spread and add one more to our list of imported weeds, mentions the Sweet-brier Rose as an example of a most troublesome pest in this state. There must be some mistake about this, however, for the Sweet-brier is by no means abundant, even in neglected pastures and fields. Probably some or all of our common native Roses are included in the general condemnation. And in this part of the country Roses of any kind are easily enough destroyed if there is any desire to do so. In some parts of Australia, however, where the Sweet-brier Rose has been introduced from Europe, it is said to have become a serious pest, the climatic conditions enabling it to propagate rapidly and grow luxuriantly. The name of pest might be urged against many other foreign shrubs or trees by those opposed to the naturalization of foreign impor-

tations which are not directly useful. The common Barberry, *Berberis vulgaris*, is an example. This is more abundant here than the Sweet-brier Rose and delights in similar situations. Some of our states have passed laws against the existence of this Barberry because it was found to be the host plant of a certain fungus which, in another stage, affected wheat.

The common Privet, *Ligustrum vulgare*, has been regarded as a nuisance under some circumstances; the Buckthorn, *Rhamnus catharticus*, has been found fault with because it occasionally escapes from cultivation and crowds other natural shrubbery; and there are people who would banish the Chinese Ailanthus, or Tree of Heaven, because of the disagreeable odor of the flowers and its free, reckless habit of throwing up suckers.

Arnold Arboretum.

J. G. Jack.

Climbers for Garden Fences.

THERE is one thing in which we suburban gardeners usually fail to make the most of our opportunities. We have generally many yards of fences, which at best are not ornamental, serving only to give a more contracted, formal look to our small gardens. We usually are content to leave these mostly bare, and we seldom plant our gardens so that these enclosures will be thoroughly well covered and obliterated as structures. Yet there is a wealth of material available for such purposes, and this is not only mostly beautiful in itself, but while draping the fences with foliage enlivened with bright flowers, they also serve two especially useful purposes. In the first place, the special boundaries are thereby made less prominent, and the gardens are thus practically enlarged. And they play a still more important part in making effective backgrounds for the borders. The importance of beautiful backgrounds cannot be too strongly urged, and I fear we usually give them too little study. We grow many plants with much care, often to be disappointed, simply because, while they may be handsome in themselves, there is no foil against which their beauties are thrown. A garden in which impressions are only secured from a view overhead, is, of course, not as effective as one where the same material produces pictures from all points of view.

It is not much trouble to cover the fences with annual vines, many of which have a marvelous capacity of growth. It is sufficient to mention the Ipomoeas, of which there is a great variety, the Gourds, Japanese Hops, Cobæas, etc. But these must be replaced each season, besides which there is a wealth of material, mostly hardy, which is rather more effective, and which will increase in beauty from season to season. Roses must not be omitted, of course, and some of the original species are especially effective, though the foliage will require some care to keep it in good condition during the season. GARDEN AND FOREST has given full descriptions of all these Roses. The thriftiest is *Rosa multiflora*, with myriads of small white single flowers, borne on graceful sprays. A plant of this Rose will quickly cover a large space. Mr. Dawson's hybrid of this species, the Dawson Rose, produces strong long shoots filled with clusters of exquisite pink flowers, small and double. Probably the new Rose, Crimson Rambler, will prove a darker flower with the same habit. Later, *Rosa setigera* will delight any grower who can enjoy an informal mass of simple flowers. The climbing *Hermosa* is a valuable plant in this latitude, and it will be well with such plants as this to heighten the fence with a trellis. The *Gloire de Dijon* is the most prolific of the running Roses, but needs a little protection here, or the stems will be ruined, though it is perfectly hardy at the root. Old-fashioned gardens used to have strong-growing Cabbage or China Roses, which were very effective; but these seem to have disappeared, crowded out by the newer strains, of which few seem to have the climbing habit.

The variegated Grape (*Vitis heterophylla*) is one of the cleanest and most effective low-growing vines of perfect hardiness. At present it is thick with foliage borne on graceful sprays, this being daintily variegated, and not offensively so, as is too often the case with such plants. Later it will be furnished with an abundance of violet-colored berries.

The Clematis family furnishes many varieties for a pleasing selection, all beautiful, and some with very thrifty habit of growth. Personally I prefer the small white-flowered kinds, like *C. flammula* and *C. paniculata*. The former sweet-scented variety has just finished giving a wealth of its delicate sprays. A similar species with smaller leaves is just succeeding it, while *C. paniculata* will carry the effect forward to September. *C. crispa* and *C. coccinea* are curious and interesting climbers, with larger closed flowers. The latter plant seems to have been crossed recently with a large-flowering species, produc-

ing a new break. The larger-flowered Clematises are effective plants when they do well, but, with the exception of *C. Jackmannii*, they are usually short-lived, even with skillful culture. As generally grown they do not cover space very well, and it is not a bad plan to grow them near some more thickly furnished climber. I had a plant of *Lady Bovill* growing and flourishing through a variegated Grape-vine, and the combination was very good. The Clematis foliage has been much eaten this year by the large black beetle which usually appears with the Asters in August.

The hardy Peas, especially *Lathyrus latifolius*, are useful for fence-covers, as they will quite overtop it. Of these I fancy the white-flowering ones, though those of a light pink color are also pleasing. The type is an ugly purplish-red. I have had named varieties of the type, *Turneri* being now in flower, and this just escaped being a good color. There are a number of species of hardy Peas which it would be well to try, as *L. Drummondii*, *Sibthorpi*, *Gorgonus*, *rotundifolius* and *tuberosus*, though I have not been able to establish them, excepting only the latter. Then there are several California kinds, as *Splendens* and *Sulphureus*, which might be hardy south of New York.

We have two very good hardy climbers in *Apios tuberosa* and the *Adlumia*. The latter is especially delicate, and would be very handsome if it did not flower, but its quickly fading flowers speedily ruin its effectiveness. While not hardy, there is no climber more handsome than *Allamanda Hendersonii*, which may be flowered successfully here in the open. It will have to be prepared in the greenhouse by starting a good dormant plant in bountiful root-room in fertile soil. It may be transferred out-of-doors in June, and in not too much sunlight it will flower as strongly as under cover. It might be well to try some other greenhouse climbers in the open, the *Passifloras*, *Bougainvilleas* and *Aristolochias*, for instance. However, the really hardy plants will furnish abundant materials for most of our gardens, and there is little danger that we shall all produce uniform effects.

Elizabeth, N. J.

J. N. Gerard.

Alströmerias.

THE hardness of these fine plants has been very much underrated. In my garden, seeds of *Alströmeria aurantiaca* and *A. aurea*, scattered by the bursting of the seed-vessels upon the surface of the ground in August, take root and grow vigorously the next spring. In this way the neighborhood of a large bed always exhibits a number of small plants which grow like weeds, but which do not bloom until the second year. The bed itself has now become a dense mass of plants, and must be dug over in September, so that the tubers may be again planted at proper distances. The young plants go through the winter without injury, though, in spite of the relative mildness of the climate, the thermometer not seldom falls to ten degrees, Fahrenheit, in the course of the winter. Large plants require no covering to protect them from cold, but, unless the root is in very well drained soil, the tubers are apt to rot. I cover my large bed with a board frame in November after the plants have died down, simply to protect the roots from winter rains, yet one or two large plants have done very well without this protection. The soil here is a light loam upon a bed of clay three or four feet below the surface. A top-dressing of stable-manure in the fall is a decided advantage. Vilmorin, in the *Fleurs de Pleine Terre*, says that even in the climate of Paris the tubers should be buried from twenty to thirty, and even from forty to fifty centimeters (from eight to twenty inches) beneath the surface. Now, not only here at Newport, but even in the much more severe climate of Cambridge, Massachusetts, no such precautions are necessary. In a very fine private garden at Cambridge I have seen large clumps of *A. aurantiaca* and *A. aurea* which have stood out for years without any protection whatever, but it is to be noted that the soil is a rather coarse sand with a bed of clay many feet beneath the surface. What I have said applies also to *A. Chilensis* and its various forms, but probably not to the other species.

As it is difficult to import the tubers from Europe on account of their brittleness, it is much better to get good seed, if possible. And this brings me to another point: Most of the seed which I have imported came from a well-known German firm in Italy, and I believe that the seeds sold in England and France come from the same source. It cannot be obtained, so far as my experience goes, until the late autumn months at best, and frequently not until the spring. A very small proportion of this seed will germinate, even if sown in a frame as soon as received and protected during the winter, or

if sown in a greenhouse. Whether this is due to the fact that the seed is not fresh, or that keeping only a few months after it is ripe injures its germinating power, I am unable to determine. There is always a great difficulty in obtaining from Europe seed very recently gathered. As all gardeners know, a year is lost when seeds of many species of *Primula* and other fine plants are not sown until the spring after they are collected. Has not the time arrived when seed-growing should be undertaken with us? The same remarks apply to many fine bulbs for summer planting and autumn blooming. I refer, for instance, to all the Autumn Crocuses, *Colchicum*, *Nerines* and *Sternbergia lutea*. These should be replanted as soon as possible after the ripening or decay of the foliage. But it is practically impossible to import the bulbs in July or August. I have usually received them in September at the earliest, and the bloom for the first year is then worthless. In fact, such bulbs require several years to recuperate. Would it not pay the California bulb-growers to cultivate the bulbs which I have named?

Newport, R. I.

W. G.

The Hardy Flower-garden.

AFTER repeated trials, *Calochortus Weedii*, a rare and beautiful species from southern California, has at last bloomed here. The plant is a little less than a foot high, bearing three to five large bright yellow flowers, three inches wide. The bulbs were planted in a frame last autumn and covered with a good depth of leaves. It is one of the last of the Californian species to bloom, coming into flower before the Mexican *Calochorti*.

Tigridia Dugesii (Watson), a Mexican plant, is now in bloom. It resembles *T. violacea* in height, time of flowering and the size of its flowers; but the flowers are a very pale blue, almost white in fact, with a brown and yellow centre. *Nemastylis flava*, an Iridaceous plant from Mexico and quite new, is now showing bright yellow flowers about the same size as those of *Tigridia Dugesii*. The flowers of this genus are generally blue.

Bessera elegans, now in bloom, has done remarkably well with me this year for the first time. It insists upon having perfect drainage. Indeed, it demands more than this; it requires a dry, sandy situation, and would, no doubt, succeed on the hottest portions of the rockery where the soil is two or three inches deep.

Erodium macradenium, a plant of the *Geranium* family, is a low-growing hardy perennial from the Pyrenees. Its height is about six inches, and the pale violet flowers are about half an inch wide. The two broader petals are dark purple at their base. It has been in bloom almost every day since the first of June.

Gentiana pneumonanthe, the Wind Flower, has flowered well with me. It will grow in drier soil than most species of this genus. Its deep blue terminal and axillary flowers are about an inch in length by half an inch through. It is a native of Europe and attains a height of about eight inches.

Centaurea Ruthenica is a Russian species three feet high, with good-sized heads of pale yellow flowers. Its foliage is rich, and, altogether, I consider it a much more attractive species than the *C. dealbata*, from the Caucasus, which attains a height of about eighteen inches, with more numerous, but smaller, rose-colored flowers. Both species are quite hardy.

Veronica spicata, which blooms about the middle of July, has good-sized spikes of light blue flowers three to seven inches long. The plant is about two feet high, hardy, and in every way desirable for the mixed border.

Lepachys pinnata, a tall western plant, closely allied to *Rudbeckia*, the Cone-flower, comes into bloom about the last of July. Its drooping bright yellow rays are quite pretty, and it is effective for massing. *Rudbeckia speciosa* is somewhat similar to the *Lepachys*, but is taller, with orange-yellow flowers three inches across. The yellow petals contrast finely with the dark purple disk.

Silene Shafta, a Prussian species, opens its purple flowers about the last of July. They are quite small, but numerous, and make the little plant, when at its best, really pretty. *Dianthus glaucus* blooms after most of the hardy Pinks are past, and I think this advantage worth noting. Its flowers are fragrant, about an inch wide, and of a light pink color.

The little Welsh Poppy, *Meconopsis Cambrica*, blooms from seed about the 20th of July. The flower is a peculiar shade of reddish yellow about two inches wide. The plant attains a height of about ten inches. It is a perennial, but did not survive the winter here, though well protected. Perhaps this protection was what killed it. However, it does finely treated

as an annual, and is one of the most attractive little species I have seen.

Several of the Sea Pinks (*Armeria*) do finely here. *A. plantaginea* is about two feet high, with pale pink flowers in round heads and on long naked stems. *A. montana* has bright pink and very handsome flowers, which remain at their best for a long time.

Charlotte, Vt.

F. H. Horsford.

Midsummer Cultural Notes.

THIS is a time of particularly active growth among foliage-plants under glass, and close attention to watering, syringing and ventilation should therefore be observed. Healthy Palms will absorb almost unlimited quantities of water at this time if proper drainage has been supplied to the pots, and during bright weather will enjoy being syringed twice a day. At the afternoon syringing it is a good practice to close the ventilators for an hour or so, even though the house becomes quite warm, as this will encourage growth by checking too rapid evaporation from the foliage; and after this vapor-bath has been continued from one to two hours, ventilators should be opened and air given all night.

Various fine-foliaged plants, like *Sphærogynes*, *Dieffenbachias*, *Dracænas* and *Marantas*, will now be growing fast, and will require abundant moisture and shading to color well. If exhibition specimens are desired the plants must not be permitted to become badly root-bound, for such plants are gross feeders, and the lower leaves are sure to suffer when the roots are not acting. The *Alocasias*, too, enjoy liberal treatment, though usually in a much more open compost than is required for the plants just named. *Heliconia aurea striata* and *Phrynium variegatum* are both quite easy subjects to grow, and very effective for conservatories, though the *Phrynium* will endure the most exposure without injury.

Nepenthes will now be growing very freely either in pans or baskets; the latter method displays the curious pitchers to the best advantage. In repotting *Nepenthes* it should be remembered that their roots are very tender and brittle, though wiry in appearance, and a decided check will be given if the roots are disturbed to any great extent. A mixture of coarse peat and sphagnum-moss makes a satisfactory compost for them, and free applications of water are needed both at the root and overhead.

Old plants of *Dracænas* that have become leggy and unsightly can now be topped by making an incision just below the leaves and then binding up the wound with moss, which must be kept continually moist to induce the formation of roots. The same process may be employed in the case of *Ficus*, *Pandanus* and various other plants at this season when root-action is so vigorous.

Ferns and *Selaginellas* will also require abundant watering at the root, and in some instances overhead, but it is safest to err by omission in the matter of syringing Ferns, for the majority of them will thrive equally well without having their foliage sprinkled, and to some it is a positive injury.

Many cool-house plants, like Indian *Azaleas*, *Camellias*, *Genistas*, *Acacias*, *Ericas* and *Gardenias*, will be summering outdoors, and the main cultural point to be observed with these plants is not to allow them to suffer from drought. Thorough syringing every day with a strong pressure of water is the best way to keep them healthy and free from insects. The *Azaleas* should have full exposure to sunlight in order to insure well-ripened growth and abundant flowers the following season, but the pots should be plunged to protect the tender rootlets from excessive heat.

Holmesburg, Pa.

W. H. Taplin.

Correspondence.

Orchids in Wellesley.

To the Editor of GARDEN AND FOREST:

Sir,—One of the best collections of Orchids in Massachusetts is that of Mr. H. H. Hunnewell, at Wellesley. It numbers about 4,000 plants, and it has required the labor of years to make it so large and complete.

Among the *Odontoglossums*, *O. Alexandræ*, on account of its variability, is considered the most useful and it is one of the most beautiful of Orchids. Its flowers range in color from pure white to yellow and rose, including spotted forms, some with a tinge of brown. It is a great favorite of Mr. Hunnewell's, judging from the many fine plants seen of this species, and among the many fairy-like sprays of it I noticed at a recent

visit no two were alike. *O. vexillarium* is another valuable species, on account of the distinct color and large size of its flowers. There are many varieties of this charming species, and one of them, *Album*, is grown here in quantity. Its lovely white flowers have only the faintest tinge of rose toward the lower portions of the sepals and petals. *Rubellum* is a variety smaller than the type, but with colors intensely brilliant, in which rose, magenta-rose and crimson-purple predominate. Many fine plants of *O. Pescatorea* may be seen, although now out of bloom.

Odontoglossum Hunnewellianum is a natural hybrid, which was discovered in Bogota in 1888, and introduced by Messrs. Sander & Co. Its flowers, borne on racemes, are waxy-white, thickly spotted with brown, the petals tipped with yellow, and no two plants produce blooms exactly alike.

Oncidium macranthum, with flower-spikes several feet tall, finely branched and carrying a wealth of orange and brown flowers, was growing here in perfection. Here too, were good plants of the robust *O. phymatochilum*, with its long spikes of curious and fragrant flowers, which remain open two months. Fine plants of *O. serratum* will soon open their large chocolate-brown and yellow-margined flowers, borne on their long twining scapes.

Among the *Cattleyas*, a magnificent specimen of *C. Gaskelliana* was carrying 160 very large flowers. Very strong and vigorous are the plants of *C. virginialis*, whose beautiful flowers, with snowy white sepals and petals, are delightfully fragrant. In the *Gigas* section, *C. imperialis*, with flowers ranging from lavender to deep magenta, and some of them ten inches in diameter, was very conspicuous. *C. Sanderiana* was in the richness of its foliage and in the size and color of its flowers equal to the best forms of *C. gigas*. Several plants of the new *C. Victoria reginæ* will soon follow these in bloom, as they are now showing strong flower-spikes set closely with buds, while the many robust-growing varieties of *C. labiata* will not flower before November. There is a peculiar airiness and grace about the flowers of this *Labiata* section, and their fringed wings give them a light and soaring character, which, together with the marked variety of form and color which they display, justifies the admiration they command. Of course, there are numberless plants of *C. Trianae*, and especially of the nearly white flowering varieties, and they are all showing strong flower-sheaths. Here were *C. Mendelii*, with its white and delicate mauve flowers, and the collection is rich in plants of *C. Lawrenceana*, which is becoming somewhat rare. I noted a magnificent plant of *C. Skinneri*, which had recently been a beautiful sight with its rosy-purple blossoms, as well as *C. Warneri*, *C. superba*, *C. Wallacii*, *C. Wagneri*, *C. Reinechiana* and other varieties of *Mossiae*, all in splendid condition.

The robust *Cypripedium grande*, a garden hybrid, was the most striking specimen of this genus in flower. The extended pouch and ribbon-like petals, a foot or more in length, pale yellow staminode, flushed with crimson and fringed with a darker shade of the same color, altogether make an attractive picture. Other *Cypripediums* in bloom were *C. Curtisii*, *C. Harrisianum* and *C. barbatum Warneri*, *C. superba* and *C. concolor*, all worthy of notice and fine specimen plants.

Dendrobium Dearii, with its white blossoms, nearly three inches across, and produced on racemes ten or a dozen of them together, seem to float in the air like butterflies, and last several weeks in perfection. The golden yellow and fragrant flowers of *D. suavisimum* are produced freely in arching racemes, and also remain for a long time in full beauty. *D. clavatum* is notable for rich trusses of rich orange-yellow flowers, and *D. Wardianum*, an early bloomer, shows many strong and beautiful spikes. *D. crassinode* is a distinct and beautiful species which ought to be seen in June, when it produces its beautiful flowers, waxy white, tipped with magenta-purple, and showing a white velvety lip with an orange blotch at the base.

Many magnificent specimens of *Lælia purpurata* are here collected. *L. amanda*, soon coming into bloom, is a distinct plant with flowers five or six inches across of a flesh-color, with a rich purple venation. Plants of *L. anceps* are already beginning to show their spikes, as do the white varieties. Of the curious *Masdevallias*, the best species here are *M. Davisii*, with beautiful orange-yellow flowers, and many varieties of *M. Harryana*, which is one of the handsomest and most distinct species of the genus. *Grammatophyllum Elwesii*, *Thunia Bensoinæ*, different *Ærides*, with their long racemes of fragrant purple flowers, and many other rare plants of this family are found, not only in the three large houses devoted entirely to them, but in many other nooks and corners where their beauty is most effectively displayed. Mr. Hunnewell throws open these treasures of his glass houses, as well as the

beauties of his extensive grounds, to the general public, and large numbers of visitors avail themselves of this privilege.
Wellesley, Mass. *A. M. S. Rossiter.*

The Forest.

Mixed Oak and Beech Forests of the Spessart: Management by the Bavarian Government.—II.

LENGTH OF ROTATION FIXED FOR OAK AND BEECH.

THE woods here described are all what is called "high forest," that is, the trees are raised from seed, either self-sown or planted, naturally or artificially. In order to explain a term which has been used already, "the period of rotation," it will be convenient to say a word regarding coppice woods, consisting mainly of stool-shoots or root-suckers, which are periodically cut over. The object of coppice woods is the production of hop-poles, vine-props, withies for basket-work, fire-wood, bark used for tanning and the like. For this purpose the coppice is cut over at a certain age, one or two years old in the case of Osier beds, fourteen to twenty years in the case of Oak coppice, where tanning bark is the principal produce, and so on. An area of Oak coppice, managed on a rotation of, say, fifteen years, is divided into fifteen subdivisions or compartments; compartment 1 being cut this year, compartment 2 the next, and so on. After the fifteenth year, when compartment 15 has been cut, the coppice shoots on compartment 1 have attained the age of fifteen years, and when this has been cut over the second time it may be said that the second rotation has commenced. High forests are also divided into compartments, but the number of these compartments has no relation to the length of rotation. Cuttings of the mixture timber in one compartment are generally continued during a number of years, and in most cases cuttings go on in several compartments at the same time. Oak stools one hundred years of age and older may still, on being cut over, bring forth vigorous coppice shoots, and if the operation is carefully performed Oak stools may last during six or more rotations. In the case of high forest it is different; here the term of rotation means the time which elapses from the seedling until the mature crop is finally cut down.

Generally it may be said that in the Spessart it is most advantageous to let the Oak attain an age of 300 years, and hence 300 years has been fixed as the period of rotation for this species. It does not, however, follow that no Oak-trees will be cut before or after they have attained that age. As already explained, many of the trees now standing in the Spessart are much older; in fact, the greater portion of the yield expected during the first period will consist of much older trees. Some of them show signs of deterioration, as indicated by their getting dry branches or becoming stag-headed. Such trees are always removed first, sound and vigorous trees being left as long as possible, or until the compartment in which they stand is taken in hand for regeneration.

It is quite different with the Beech, of which, as previously explained, the greater part can only be sold as fuel, for charcoal burning, or for the manufacture of wood alcohol and other products of the dry distillation of the wood. No object would be gained in allowing the Beech to attain a great age. Hence, for Beech, the term of rotation has been fixed at $5 \times 24 = 120$ years. A mature wood in its normal condition would, therefore, in the Spessart, consist of Oaks 300 years old, mixed with Beech 120 years of age. In other words, when the Beech in any compartment is cut, a proportion of the Oak-trees would be held over until the second cutting of the Beech took place. It does not, however, follow that a proportion of well-grown Beech-trees might not be held over so as to attain a greater age than 120 years, for there is a demand for large Beech-timber, though that demand is at present limited.

In the numerous valleys which begin in the Spessart range, and which run in all directions toward the Main River, large saw-mills have been established, where timber

of these forests is cut up. These establishments do not, however, alone depend upon the Spessart timber. They import from Slavonia and other parts of Germany large quantities of Oak, Ash and Elm. The Spessart Oak has given the start, but the business has developed and the produce of the Spessart is no longer sufficient to meet the increasing demand. Cheap railway freights and the low price of timber in these remote forest districts have brought about this development of the lumber industry in the vicinity of the Spessart. The working-plan, sketched above, provides for a fairly even supply of large Oak-timber from the Spessart during the next ninety years. This certainty of a sustained supply during so long a period is a great advantage for the establishments alluded to, as well as for the lumber trade generally in this portion of Germany. During the interruption in the supply of the Spessart Oak, which will take place at the close of this period, use will be made of the produce of forests in other parts of Germany, which are stocked with Oak-trees of the requisite age.

RECLAMATION OF THE DEVASTATED FOREST-AREAS.

The second point to which the attention of the Bavarian Government was specially directed, was the reclamation of the devastated forest-areas which had become impoverished by reckless clearances and by the uncontrolled wholesale removal of litter. The northern portion, situated north of the great railway line Aschaffenburg-Lohr-Wurzburg, had suffered most, because here the villages are larger and more numerous. Naturally, places with shallow soil, such as the tops of ridges and localities with the rock close to the surface, have become impoverished to a greater extent by the removal of litter than places with deep soil. On these devastated and partially denuded areas it was hopeless to attempt to raise Oak and Beech; conifers were the only trees from which success could reasonably be expected. The first experiments were made with Scotch Pine, later on Spruce also was resorted to, particularly on low ground. In 1820 1.7 per cent of the total area was stocked with conifers; in 1876 the area had been increased to 35 per cent., and it is still larger at present. Most of these coniferous woods are on the outskirts and in the northern half of the Spessart, and this explains that the traveler who passes through this portion of the Aschaffenburg-Lohr railway line sees more Scotch Pine and Spruce woods from the train than Oak and Beech. These kinds have a much more rapid rate of growth than Oak and Beech, hence the term of rotation for Scotch Pine has been fixed at $4 \times 24 = 96$, and for Spruce at $3 \times 24 = 72$ years. Although the timber of these trees commands much lower prices than Oak, these devastated and impoverished areas, nearly all of which have now been planted up in this manner, will shortly begin to yield a good return.

It is noteworthy that in this large forest district, besides the Juniper (*Juniperus communis*), no coniferous tree is indigenous. Higher up the Main River, above the town of Kitzingen, indigenous forests of the Scotch Pine occupy large portions of the valley, and east of the river, between Kitzingen and Bamberg, the hilly tract known as the Steiger Wald, is stocked with a mixed forest of Beech, Scotch Pine and Oak. Nor are the Spruce, the Larch and the Silver Fir indigenous in the Spessart. Groups of Larch and Spruce were planted here and there during the last half of the eighteenth century, and fine specimens of these species, 120 years old and upward, are found here and there. The good condition of these old trees has induced the Bavarian forest authorities not to limit the planting of these trees to devastated and impoverished land, but to contemplate the creation of mixed woods of Beech and these conifers. This will be more fully explained further on.

Bonn, Germany.

Dietrich Brandis.

Notes.

A tract of Cypress swamp-land containing 30,000 acres, and lying adjacent to Lake Maurapas, in Louisiana, and reported to contain three hundred million feet of choice timber, has been

lately sold to a Chicago capitalist. This is said to be the largest sale of Cypress timber-land on record.

The foliage of *Narcissus Trumpet major*, from the Pyrenees, did not complete the ripening of its foliage until after the middle of July, while other varieties in the same position have long since gone to rest, and probably the *Poeticus* varieties have begun to move and start new roots. Such facts show the necessity of discrimination and lifting and planting the bulbs of different varieties.

The large sales of melons in this market would seem to indicate that the southern growers of this crop were having a successful season. But the farmers of Georgia say that the late frost killed the entire early crop, while the second crop has been shortened by the drought and the closing of the western markets by the railway blockade has brought additional hardship, so that few growers will make their expenses.

A meeting of the botanical societies of France and Switzerland is being held in Geneva this week. To the programme of the meeting, our correspondent, Dr. Christ, President of the Botanical Society of Switzerland, adds a most interesting and instructive account of the botanical features of those parts of the Valais which the members of the societies expect to visit in the numerous excursions from Geneva which have been planned for their instruction and amusement.

The railway troubles which checked the shipment of California fruit to eastern markets has led to a heavy increase in the amount of dried apricots, which will reach a grand total of 12,000 tons. Eastern buyers are now offering no more than seven cents a pound for this fruit, but California dealers are asking ten cents. The disposal of this large quantity of dried apricots, nearly double the product of any previous season, will be helped by the scarcity of the prune crop.

During the past year or two experiments have been made in various ways by German officers with peanut flour and dried and roasted peanut grits as food for soldiers as well as for horses in the German army, but, although no symptoms of injury to health resulted from the use of these articles, they were not adopted as a part of the army ration. The troops showed an unconquerable dislike to food prepared from peanut flour or grits, and its frequent use is not considered healthful or nourishing. An investigation of the merits of peanut-food articles was also made in the imperial navy, and their value as a diet for invalids was tested, but their use was not sanctioned.

A Municipal Art Society, modeled after the one in this city, has been organized in Boston. Its object is "to increase the beauty of the metropolitan district of Boston by the gift and erection of works of art in public places, and by promoting public action having in view the better aspect of the city." Its executive committee consists of nineteen members—a president, two vice-presidents, a secretary, treasurer and counsel, the Mayor of Boston, and twelve others, three of whom must be architects, three painters, three sculptors and three laymen. It would seem as though at least one professed landscape-gardener might well have been included in the list.

Experiments during three years have been carried on at the New York State Experiment Station by Mr. D. G. Fairchild to compare the efficacy of different fungicides against the leaf-blight, so destructive of nursery stock of Plums and Cherries. Windsor, Yellow Spanish and Montmorency Cherries on Mahaleb stock, and the same variety on Mazzard stock, were treated, and in every case where the Bordeaux mixture was used the leaf-blight was prevented to a notable degree. The same was true of Plums on Myrobolan and Marianna stock. The sprayed trees held their leaves a month later than the unsprayed. The tops and roots weighed more, and the stem was larger.

A memorial has just been presented to Congress by Senator Squire, of Washington, praying for the establishment of a National Park on the Pacific coast, which shall include Mount Rainier. The memorial, which is signed by many eminent men of science, speaks of the singular grandeur of the mountain scenery which it is desirable to protect from defacement, and makes a special appeal for the preservation of the rare colony of Arctic animals, as well as the Arctic plants, which inhabit the flanks of the mountain, where they are completely isolated from their kind. Other objects of interest are the eight large glaciers, besides the magnificent forests on the slopes of the mountain and at its base, where the trees attain a size and beauty rarely seen outside of the Puget Sound region.

The Summer School of Science for the Atlantic provinces of Canada closed its eighth session on the 19th of July. The meetings, which were this year held in Charlottetown, Prince

Edward Island, had a membership of almost a hundred students, many being teachers from remote points, who were refreshed by a vacation in a delightful climate, and amid scenery of quiet beauty, while enjoying excellent opportunities for instruction in the natural sciences. Especial attention was given to botany. This department was directed by Professor G. U. Hay, editor of *The Educational Review*, Mrs. W. W. Andrews and Miss Antoinette Forbes. The meeting next year will be held at Wolfville, in the Annapolis Valley, which is the centre of the fruit-growing region of Nova Scotia and the seat of the Government School of Horticulture.

Monsieur Laverune, in an article on bread, published in *Cosmos*, gives some interesting information on this form of food which is so universal in enlightened countries that the word is used as a synonym for all food. In early historic time men were not familiar with the preparation of wheaten flour which we call bread, and in our own day there are entire populations wholly ignorant of its use. In the vast empire of China, for example, containing a quarter of the human race, bread, as we understand the term, is used in one province only. The bread-eaters are still a minority in the world. No more than five hundred millions of persons habitually consume wheaten bread. Even in Europe, great numbers of the people who eat bread are reduced to use an inferior article made of coarse cereals and pulses and indifferently prepared. In fact, the world is moving but slowly toward the realization of the familiar prayer of Christendom, "Give us this day our daily bread."

Most cut flowers look better when associated with their own foliage than with any other surrounding, and carnations do not make an exception to the rule. In writing on this subject, Mr. Albert M. Herr suggests to commercial growers in *The American Florist* that in order to obtain the requisite amount of foliage to accompany a given number of flowers some plants should be grown for their leaves alone. The foliage could be grown in cheap houses without much heat, and the extra price received for a dozen long-stemmed flowers, together with a dozen or so sprays of good foliage, would pay for the trouble and be more satisfactory to the buyer. A bunch of carnations is handsomer when some buds are included with the flowers, but not so many of these are needed when enough foliage is used. Varieties differ much in the form and color of their leaves, and certain kinds might be selected with reference solely to the value of their foliage for cutting. There seems to be nothing visionary in this suggestion, and we hope to see carnation-foliage a merchantable commodity as well as carnation-flowers.

Only eight car-loads of California fruits were sold in this city during last week, and these were the earliest arrivals after the railroad blockade. But on Monday of the present week seventeen car-loads were sold at auction, and the market is once more full. Last week peaches commanded the extreme wholesale price of \$5.55 a box, and the same peaches are now selling at \$1.50, while Tragedy prunes, Washington plums and Bartlett pears are quite as cheap. Crawford's Early is, perhaps, the most plentiful among California peaches now here, and of other seasonable varieties St. John, which originated in Louisiana, is among the best; it is even earlier than Crawford's Early, though somewhat smaller; the flesh is juicy and rich in flavor, while its orange-yellow and deep red color makes it very attractive. Decker, Foster, Strawberry and Red Free are other varieties which are here in quantity. Nearly a dozen varieties may be seen in any large assortment of plums, including Purple Duane, Columbia, Washington, Peach, Kelsey, Ogon, Bradshaw, Quackenbos and Royal Hative. Buerre Clairgeau and Clapp's Favorite pears are quite abundant, and large Princess Anne cherries of a most delicious quality are now so plentiful that they may be bought as low as eighty-five cents for a ten-pound box. A few late Moorpark apricots and the first new white nectarines came in this week with early white Astrachan apples from the Sacramento valley. The California fruit season in the east is thus fairly open again, and it is gratifying to know that the losses of fruit-growers on the Pacific coast will not be as serious as has been feared, because the fruits there are ripening at least two weeks later than their usual time. Choice Niagara and Delaware grapes, from North Carolina, are now twenty-five cents a pound, and hot-house White Muscats and Black Hamburgs, from Long Island, cost \$1.25 and \$1.50. A few Alligator pears in the markets are sold for \$2.00 to \$3.00 a dozen, and many more could be handled, since salads made of them are rapidly growing in favor among epicures. Evaporated California peaches, as well as cherries and blackberries of this year's crop, are already on sale.

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The Harlem River Speedway.

A LETTER addressed to the Mayor of New York, and published in the daily papers last week, invites attention to a state of things which one can hardly conceive of as existing in any civilized community, much less in the largest and wealthiest city in the New World. This letter was prepared by members of the Municipal Art Society—men who speak for architecture, painting and sculpture, and who represent the education and refinement of the city—and it sets forth that the Commissioners of Public Parks of this city, in the face of repeated protests, have given out contracts for the construction of a parkway extending for more than two miles along a picturesque river-front, without taking counsel of their own professional adviser or of any other man who has had any training or experience in designing works of this class. This means that the Park Board is wantonly throwing away an opportunity to make one of the most beautiful drives and promenades in the world, and has ordered engineers to build a road-bed simply; that is, they are to cut and fill and level off the ground so as to make a surface to drive over, with no more thought of providing for a pleasure-ground that shall be attractive or useful, except for a single purpose, than if they were constructing a foundation for a tramway or trolley line.

Ever since they undertook to furnish a track for light-harness driving the entire course of the Park Board has been marked by singular perversity and ignorance. They began by securing an act of the Legislature enabling them to seize a part of Central Park and turn it into a dirt road. But this proposed outrage caused such an uprising of the people here that the Legislature, the Governor and the Park Commissioners were all driven within a week to face about and abandon their plot. When the banks of the Harlem had been selected as a site for the road Mr. Vaux, the landscape-architect for the Board, provided a plan which included designs for preserving and enhancing the natural

beauties of the water-front and for making them available. This plan was, however, ignored, and the Board ordered the construction of a road which was inferior even for the purpose which they had first in mind, and which did not leave even standing-room on the shore for a pedestrian, but shut off the river-front from every one who could not visit it in a road-wagon. This attempted violation of the people's rights and defiance of common decency called forth a protest from every organ of public opinion in the city; and a formal remonstrance from all societies which have to do in any way with art, was made against the abandonment of the uniform practice of the city in treating its parks as works of art. But men essentially boorish can never understand what every refined mind knows by intuition, and therefore this protest passed for nothing, and the construction of the speedway went on. Finally, an exasperated people appealed once more to the Legislature, and a special act was passed which enjoined the Board from constructing a road without a walk on the river-side. Even then contracts were given out in contempt of the law, and Mr. Paul Dana resigned his post as Commissioner because the Board was plainly and willfully violating the law. They did not desist from their law-defying course, however, until three citizens had the courage and public spirit to appear personally in the courts and make complaints that their private rights had been invaded.

Without giving any further details of this disgraceful history, it is enough to say that the Park Commissioners are still doing all they can to defeat the often expressed desire of the people. They are not only building the road without any regard to its artistic value, but they are narrowing down the walk which the law compels them to lay along the river-side, so that no adequate provision is made for shade or for accommodating the throngs who will one day gather here to witness regattas on the river and other spectacles. To the men who ask them why they do not consult their landscape-architect the Park Commissioners reply that they will invite his advice at the proper time, evidently considering it the function of this artist to make flower-beds and plant bushes in spots where he can find room for them after the road-makers have finished their digging.

Altogether, this is an unpleasant showing for a community which considers itself enlightened. No sane man would think of asking one of these Commissioners for advice as to laying out a path across a door-yard; and yet they assume to know enough to design a work like this speedway, which is worthy of all the study that a trained artist can give to it, and which might be made under skilled treatment one of the noblest and most useful public works of this city. This inability to appreciate the value of artistic training is the essence of vulgarity. It is worse than simple ignorance; it is a complacent belief that there is nothing better than ignorance. And meanwhile the people must stand by and see one of their most beautiful possessions laid waste because some prosperous brewer or seller of notions imagines that a commission from a New York Mayor qualifies him to design a park or a public building or any other work of art. Of course, such a man does not know how to meet a single one of the many problems which would confront a skilled park-maker as soon as he began any serious study of the difficulties and opportunities offered by the Harlem River front. He does not even dream that there are such problems, and scouting the protest of men like St. Gaudens, White and Chase, he blunders on. If a public enemy should set fire to the city some effort would probably be made to restrain him. But it would take a good many fires to work injury as serious and lasting as that which is now inflicted on the city by the very men who have been selected to protect its property. Every day while the construction of this speedway goes on the city suffers. Its money is mispent; its opportunities are squandered; its natural beauty is obliterated, and with it vanishes an attractiveness and charm which money cannot restore.

The Devastation of our National Forest Reservations.

WE have frequently spoken of the necessity of specific legislation for the general management of the national forest reservations. The mere setting apart of a territory by presidential proclamation, without making any provision for the punishment of trespassers, leaves it exposed to timber-thieves, skin-hunters and marauders of all kinds. Last spring the Secretary of the Interior caused a large number of notices, conspicuously printed on cloth sheets, to be posted in various parts of the reservations, so that no one who entered could fail to see them. After stating that the reservation had been created to maintain a water-supply for irrigation and to protect the timber belonging to the people, the notices warned all persons not to settle upon or use any of the lands for agricultural, mining or other business purposes, nor to cut, remove or use any timber, grass or other natural products. The starting of a fire and driving, grazing, pasturing and herding of live stock on the reservations were also forbidden.

Not long ago Captain James Parker, superintendent of the Sequoia and General Grant National Parks, volunteered to make a tour of the parks and reservations in California. He found that not less than 500,000 sheep were pastured on this national property, and that great damage had been done by them. The herbage was all eaten, and the smaller deciduous trees were girdled. So completely were the parks and reservations devastated of everything which could be used for fodder, that it was often difficult, when away from farms and ranches where feed was stored, for Captain Parker's company to get forage for their horses. The trespassers had manifested their lawless temper by tearing down the notices which had been put up by order of Secretary Smith.

The dispatch from which we have taken the above facts goes on to say that the Secretary has sent evidences of this defiance of Government authority to the Department of Justice, and that the district attorneys and marshals in the states where the reservations are situated will be notified to prosecute offenders to the full extent of the law. The trouble is that there is no law, and there can be no law, which will be respected by the settlers who live on the borders of these reservations, until a careful study of the whole subject has been made by competent men and the proper adjustment between public and private rights has been decided upon. It will be impossible to prevent trespassing so long as there is no law to punish trespassers, and it would be quite as impossible to enforce a law which did not, to a certain degree, conform to the best public sentiment of the states in which the cases are to be tried. Altogether, this group of facts is an additional argument for an investigation of the whole subject by a competent commission and for the establishment, as soon as practicable, of a system of management for all our parks and forest reservations.

North American Thorns.

THE interesting article in GARDEN AND FOREST for July 25th suggests a note on *Crataegus apiifolia*, the Parsley-leaved Hawthorn, which is among the prettiest of North American Thorns, and yet it is one that is probably rarely seen. I have a specimen on my grounds that is probably thirty years old, raised from seed which some friend, now unknown, sent to me from the vicinity of Vicksburg, before the war. It has now a trunk about the thickness of a man's arm at the elbow, with the round spreading head starting about twelve feet from the ground. The branches are extremely slender and numerous, so that the aspect is unique among Thorns. In spring it is a dense mass of white petals, with which the purplish yellow anthers make a pretty contrast. The bark peels off in the same manner as that of the Buttonwood or Plane tree. Strange to say, although we are able to propagate almost anything, no matter how difficult its multiplication is generally considered, we have almost utterly failed to increase this. Bud-

ding on any other varieties of Thorns we may have at hand has given us but few. Unfortunately, the plant is also a somewhat infertile individual, and we have only occasionally been able to get a few seeds, and even these have failed to grow. This season there seems a greater prospect of fertility than usual. It would be interesting to know whether any one else has plants in cultivation. Besides our failure above indicated, we have never been able to find any collector who could supply us with seeds since the few originally sent to us.

As to the difficulty of growing good specimens of the English Hawthorns, I apprehend that they do not object so much to our warm summer climate as they do to the heated soil. Whenever they are screened somewhat from the sun they seem to thrive pretty well. In Philadelphia, on the grounds of the Dundas estate, corner of Broad and Walnut Streets, there is a magnificent specimen of the common English Hawthorn, quite as large as we generally see in the Old World; but this is protected by a high wall on one side and the wall of the dwelling-house on the other, so that the sun rarely shines on the earth about the roots. On the north end of my own dwelling-house are specimens of the single Red and Double Red, nearly twenty feet high, which are in perfect health and free from all fungous diseases, and which make a magnificent appearance in the flowering season.

Germantown, Pa.

Thomas Meehan.

The Progress of Bulb Culture in North Carolina.

FEW people appreciate the fertility of much of the soil of this section, because of the remoteness of many of its best portions from general routes of travel. The black peaty soils in the counties bordering upon Pamlico, and to a great extent upon Albemarle Sound, are among the best of those which are classed as 'practically inexhaustible. No prairie land in the west excels in fertility the soils of Hyde and some of the adjoining counties, where, for a hundred years, the land has been in corn, and the farmers declare that they must keep it in corn or it will be as difficult and expensive to clear away the big weeds as it would to subjugate a thicket of brush-wood. All this, of course, is bad farming, for a good rotation would clean the land and make it a paradise of varied products. There is much, too, of this character of soil in all the eastern coast plains along the margins of the vast swamps, which will themselves at some time be reclaimed for farms; and intermingled with this peaty soil is much higher level sandy land of great natural capacity, but much of it badly worn by careless cultivation. The examples of the truck-growers, however, have demonstrated its wonderful productiveness.

In a small area on the Atlantic Coast Line Railroad, about Magnolia, Rose Hill and Wallace, the cultivation of Tuberose has been largely developed of late years, and the superiority of the Tuberose-bulbs grown there is such that these places now practically supply the demand for them here and abroad. The diminished popularity of the Tuberose has largely diminished the profit of its production, though it is still carried on in large areas, and hundreds of thousands are shipped. We have shown that here at Raleigh, upon our dry upland clay soils, we can grow Roman Hyacinths larger than any of the bulbs of this variety now classed as extra in the seedsmen's catalogues; that we can bloom Gladiolus in one year from the sowing of the seed, and that from fair-sized offsets of *Lilium candidum* the bulbs after one winter's growth measured thirteen inches in circumference. This constant agitation—if I may use so strong a word—is beginning to arouse an interest in the matter, and a recent visit to the Tuberose growers at Wallace showed that the heaven is working well. One grower had raised last year a crop of Roman Hyacinths for a Philadelphia house, which gave great satisfaction, and he is much encouraged. Another grower has this year produced for a Chicago seedsman 75,000 *Narcissus Von Sion* and a large lot of Roman Hyacinths. We measured some of his bright

and solid Hyacinth-bulbs, and found them fully six inches in circumference—very large for this variety. They have as yet experimented but sparingly with Lilies, for the growth of which their soil seems to be specially adapted. We are anxious to see Bermuda Lilies well tested in these soils and this mild winter climate, and we expect that they will surpass imported bulbs in size, though not in earliness. Ascension Lilies grown here are well ripe in late June, and this matter of early ripening will be appreciated by those who understand the necessity of having time for these bulbs to make a good fall growth before forcing for winter, and of having bulbs close at hand with live roots attached. Imported bulbs of this Lily are very low in price, but we feel that the extra quality and condition of our bulbs over the imported ones will, as soon as they are known, cause them to command a better price. Years ago we were told that American-grown Tuberose-bulbs could never compete with the Italians, but we grew them, and for a while got extra prices for them, and now who buys Italian Tuberose-bulbs? One grower showed me a thousand Dutch Hyacinth-bulbs that compare very well with the Dutch product. He is utterly unskilled in the peculiar methods of developing these bulbs, but his first effort shows that if we could get here the Dutch skill we might compete with Holland even in their favorite product. But the bulb industry seems to have started in North Carolina, and it behooves our seedsmen to be on the alert.

Raleigh, N. C.

W. F. Massey.

Botanical Notes from Texas.—XXII.

NOTWITHSTANDING the drought, it has been a good year for *Juglans rupestris*. The ground under the trees of that species is nearly covered with its diminutive fruit. Mexicans call the tree Nogal and Cañon Nogal. A much-branched and leafy shrub, resinous and viscid, with a not unpleasant odor, and from three to six feet tall, and almost everywhere around Del Rio, is *Flourensia cernua*. At this season of the year its greenish nodding flower-clusters are mostly in fruit. It may easily be recognized by the leafy bracts of the involucre and by its very villous achenes (fruits). In a little nook on the sunny side of a dry irrigating ditch I discovered a handsome species of *Hoffmannseggia*, with both flowers and fine fruit—a genuine prize.

In a ledge of limestone rocks, by the side of the railway, there were several individuals of the rare and stange *Macrosiphonia Berlandieri* of the Indian Hemp family. This species is remarkable, as the name of its genus makes known to us, for its greatly elongated flower-tube, which is three to five inches long. They had passed flowering, but their long, slender, rounded fruit-pods were in good condition and abundant. The apical coma of the oblong seeds in this species is copious in quantity and fulvous in color. Close to San Felipe, where its roots could drink as they pleased, I saw a single individual of *Eysenhardtia orthocarpa*. This more western species is much taller, sometimes becoming a tree, than its congener already mentioned. It has more and larger leaflets, and larger straight pods which become pendulous.

Next to water and the grasses, *Sotöl*, *Dasyliirion Texana*, is the richest gift that Nature has bestowed upon the stockmen of western Texas. Indeed, were it not for the abundant presence of *Sotöl* and *Nopal*, the cattle and sheep of this region nearly all would have succumbed long ago to the effects of dry weather, as until within a few days this entire western region, it is said, has been passing through the longest continued drought that has prevailed here in thirty years. Our plant is a tall-growing member of the Lily family, attaining a height of six to ten feet, and bearing a large panicle of small yellowish flowers. It begins to appear near the parallel of Del Rio, and becomes very abundant farther north. When preparing to send up its flowering stems *Sotöl* develops an immense terminal bud, whose thick leaves and leaf-stems overlap each other so closely that they become blanched and tender. In them the plant stores the starch and sugar necessary for the development and growth of the flowers and fruit. Cattle unassisted will live and thrive upon the *Sotöl*-heads; but when ranchmen use them for feeding purposes the plants are dug, their roots being very small, and piled, and the long, narrow, sharply toothed leaves burned off, leaving the head about the size and form of a large cabbage-head. In that condition they are hauled in wagons sometimes ten or fifteen

miles to the feeding-grounds, or are shipped from place to place on the railway. Before being fed, the heads are sliced with a *Sotöl* axe, the wide, ivory-white and polished leaf-stems separating. *Sotöl*-heads are very nutritious and fattening. They are said to make excellent well-marbled beef and mutton. United States people sometimes cook and eat the tenderer portions of the heads. Mexicans have a way of roasting them in an earth-pit. They also manufacture by distillation an intoxicant from the juice of the plant, which, it is said, resembles mescal in its taste and effects.

It is well that I spoke kindly of the weather and the winter as I did, for at the close of the same summer day, as I was sitting in my room, with both its north door and its south door ajar, suddenly the north door was forced open and the south door slammed shut. I did not have time to look to see who my rude caller was before a norther, with a howl, had entered the room. The next morning the ground was frozen and ice was abundant. These northers go howling on to the Gulf, blasting and withering every tender thing they touch, killing the young fruit and sometimes the trees themselves; freezing the recent wood of tender trees like the China and the Orange; cutting down the Corn when several feet tall, and sometimes forming ice in the bays and harbors of the coast. The term "norther" has become generic; and Texas has the dry norther and the wet norther, the latter species, of course, accompanied by rain, sleet or snow. Texans generally seem to regard the wet norther with more dread; but I am inclined to think that the dry species is the more destructive to vegetable, if not to animal, life. The air which it brings is so very dry that it quickly absorbs all the heat and moisture that animals and men have about them to spare, and then it searches for more, until it draws with wonderful power upon vitality itself. Within a short distance of the coast I have known the water in my sleeping-room to freeze at night, and men have frozen to death in the Gulf counties of the state. Storms of such extreme severity are rare, but they are among the possibilities of Texas weather.

Kansas City, Kansas.

E. N. Plank.

New or Little-known Plants.

Populus Monticola.

IN the fourth volume of this journal a description and figure (page 330, fig. 56) of this remarkable Poplar-tree, discovered by Mr. T. S. Brandegee in Lower California, were published. In the present issue we are able to reproduce a photograph made by Mr. Brandegee during a subsequent visit to Lower California, representing the tree as it appears in winter, growing near the summit of San Pedro Martyr Mountain, the highest land in Lower California (see page 315). The photograph was taken in October, which is the end of the rainy season in Baja California, when nearly all plants are in full leaf and flower, although this Poplar, after the manner of the other species of the genus, loses its leaves in the autumn to regain them in early spring.

The location of the tree represented in Mr. Brandegee's photograph is a spring known as La Chuparosa, at an elevation of about six thousand feet above the level of the sea. The tree is nearly one hundred feet high, with a trunk three feet in diameter. In Lower California, *Populus Monticola* is not very abundant, except in a few cañons running toward Todos Santos Bay, in some of which there are as many as five hundred individuals. This species seems to belong to elevated mountain regions, although it will grow at lower elevations, there being fine specimens at San Anila, nearly at the sea-level, in the vicinity of San José Del Cabo. More recently *Populus Monticola* has been discovered in Sonora on the western slopes of the Sierra Madre.

A tree that will flourish at the sea-level in tropical heat, on mountain summits exposed to the frosts of winter, and in the drier climate of Sonora, must have a robust constitution, and would seem well adapted to thrive in southern California, where *Populus Monticola* would be handsomer than any of the species native to the state and a much more useful tree, for it produces comparatively hard light reddish-colored wood, valued for many purposes and suitable even for furniture.

We are glad of this opportunity to call attention again to the importance of introducing this noble tree into the gardens of southern California and the countries bordering the Mediterranean, where its beauty and rapid growth will make it valuable as an ornamental and as a timber tree.

Plant Notes.

VICTORIA REGIA.—We noted several weeks ago some of the peculiarities of a new variety of *Victoria regia* at William Tricker's, Clifton, New Jersey. Since then it has made rapid progress, and is now in flower. The blooms prove to be distinct from any others which have been grown here, being not only larger, but of a really handsome shade of rosy pink. The color of the flowers of this giant Water-lily is often not very satisfactory, as it soon degenerates into a dull purple. The sepals of these flowers are smooth, not covered with spines, as usual. The newest leaf of the plant is now six feet four inches in diameter, measuring the five-inch rim, and as the plant gains in strength this size will probably be exceeded. The leaves have very little of the reddish tinge usual in the outside of the turned-up edges. A plant each of the ordinary *V. regia* and variety *Randii* in the same tank make a trio of the noblest of hardy aquatics and a most noteworthy sight.

VERBENA AUBLETIA.—This Rose Vervain, from Missouri, is a hardy species, very vigorous in growth, forming broad mats of many branching stems furnished with numerous flattened, terminal clusters of deep reddish purple flowers. Verbenas of recent years, probably from overforcing and propagation, have been so much diseased that the florists have largely discarded them, and the florists' varieties are seldom seen in gardens. When well grown they are so useful and effective that their loss is much felt. It would seem that an infusion of the blood of such a vigorous species as *V. Aubletia* might be helpful in restoring the more showy varieties to health. Here is a suggestion for experimenters in hybridizing.

PLUMBAGO CAPENSIS.—This is one of the best known of the woody plants from the Cape, and it is adapted to a great many uses. In our southern states it is almost hardy, and makes a beautiful low hedge or screen. There are few better plants for training to the rafters of a greenhouse in summer, and, when grown in pots which can be plunged at the base of low walls out-of-doors, they produce a mass of bloom all summer long, while small plants set closely make an admirable edging for the border, and this is especially true of the white-flowered form of this plant. Not long ago we saw a large specimen plant trained to a slender lattice on the porch of a cottage; its rich foliage and dense masses of pale blue flowers in terminal clusters were particularly beautiful. This *Plumbago* is easy to propagate, and can be wintered under a greenhouse bench or in light airy cellar.

CLETHRA ALNIFOLIA.—It is only within recent years that the familiar Sweet Pepper Bush of our swamps has been propagated in our commercial nurseries, and yet it is one of our handsomest native shrubs, one which requires no special cultivation, and it will thrive in any fairly good garden-soil. The pure white and fragrant flowers of this plant, in upright racemes above its glossy leaves, began to open in this latitude more than a week ago, and they will continue well into September. The plant is smaller than the southern species, *C. acuminata*, which has nodding racemes of yellowish white flowers. In vol. iv., page 65, we published a portrait of the variety *tomentosa* of *C. alnifolia*, which differs from the species in having its leaves covered below with hoary tomentum, in its longer racemes and larger individual flowers. It has the advantage of blooming still later than the northern *Clethra*, and continues in flower until frost. It is also entirely hardy in northern gardens. In England *C. alnifolia* is often forced, and as the plants bloom under these conditions when quite small, the compact little bushes, not more than two feet high, and

carrying numerous spikes of fragrant flowers, are very pretty.

RHUS SEMIALATA.—A variety of this tree, known as *Osbeckii*, has become quite common in plantations of ornamental trees in this country, and it succeeds as well in our climate as almost any Asiatic tree. In this latitude it begins to flower about the first of August, a season when few other trees are in bloom, and its large upright panicles of white flowers, standing well above the dark green long compound leaves, give it a striking appearance. The flowers are more handsome than those of our own Sumachs, the petals being pure white, although the light yellow color of the projecting anthers gives a cream-colored tint to the panicle. This tree soon reaches a height of twenty-five feet in good soil; its foliage is usually free from insects and fungi, and it has a round, pleasing outline, although the absence of foliage, except at the extremities of the branches, gives the tree a somewhat open and unpleasing appearance. The fruit is not so ornamental as that of our own Sumachs, nor do the leaves turn to such bright colors in autumn, although the species is one of the most brilliantly colored plants in the Japanese forests in autumn.

Cultural Department.

Collecting Kalmias.

SINCE we suggested the feasibility of getting a stock of *Kalmias* for cultivation by transplanting wild plants from their native haunts, we have received many letters of inquiry as to the proper methods of collecting and caring for such plants. Mr. Jackson Dawson, of the Arnold Arboretum, has probably had as large an experience in this matter as any one, and he has been very successful in growing the plants. We asked him, therefore, to reply to the questions most frequently asked—such as these: At what time is it best to lift wild *Kalmias* from the woods? What sized plants are the safest and best? How should they be treated after they have been collected? The article which follows is Mr. Dawson's instructive reply to these inquiries:

I would never take *Kalmias* from the woods when they can be found in an open pasture. The plants are more stocky when grown in the open, and have better roots than those from woodlands. I have lifted them at all times, from August to November, with general success, although I think the plants transplanted early stand the best chance.

As to size, I prefer plants not more than twelve to eighteen inches high, but the size is immaterial. If a good clump of earth is taken up with them, well-rooted and stocky plants three to four feet high may be transplanted successfully.

How ought the plants to be treated? First of all, the roots should never be allowed to become dry. When collecting the plants I always take with me a watering-can, so that I can keep the roots moist. If it is proposed to mass the plants in a large bed the soil should be well prepared beforehand. If peat can be had it is well to use a good portion of this as well as some sand with the loam. They like a sandy, peaty soil, though they will thrive in any good soil not too rich with stable-manure; when the soil is too rich the foliage will turn yellow.

As soon as the plants are received the larger ones should be set where they are to remain, made firm in the ground and thoroughly soaked. One watering should be sufficient, unless the weather is very dry, when an occasional syringing may prove helpful. As soon as the ground begins to freeze, a good mulch of leaves should be applied, and in an exposed place a few Pine or Spruce branches stuck in the ground among them will protect the foliage from burning. The poorly rooted and small plants I put in flats in sandy loam and keep them in a close frame or greenhouse for a month or two, syringing them often, but not too abundantly. At the approach of winter I place them in a deep pit or frame and plant them out in nursery-beds the following spring. In the beds they should have plenty of water until they are established. After the first year in the nursery-beds the plants can be lifted readily at any time during the season, even when they are in bloom. Last fall I helped load a car with large plants, two, three and four feet high. These, when taken from the car, were planted firmly where they were to remain, on a sandy hillside which had had

little or no preparation. The loss was not more than three or four plants in a hundred, possibly even less. The planting was done late in September.

Some years ago I had a lot of plants, two to three feet high, brought from a distance of a hundred and sixty miles. These were at once planted in a well-prepared bed. They were watered twice and mulched as soon as winter set in, and out of two hundred plants I do not think that two died.

The Mountain Laurel is very hard to kill. One year I set five hundred of these shrubs in a bed, and as the season was late they were covered with leaves and brushes. In the spring I could not find even one of the plants. The moles and field-mice had nested in the litter and had eaten them all off close to the ground. Having already given so much care to the plants, I did not like to throw them away, and therefore set them between nursery-rows. Before the end of the summer the greater portion of them had broken into growth, and in two years' time they were well-grown, stocky plants. When once well established a Mountain Laurel plantation may be burned to the ground, and it will soon recover and make a better appearance than before.

No more suitable plant can be found for the border of a wood or as an undergrowth to plantations than the Mountain Laurel. It is always attractive, whether in flower or not, and it will bear more cutting than any other shrub.

some parts of Europe; and the very general damage to the fruit by the attacks of a fungus or mildew, *Erysiphe Mors-uvae*, proves a serious obstacle to the successful cultivation of the fruit in many parts of this country.

Our American species seem less liable to have their fruit badly affected by this disease, and the few improved and valued varieties already derived from them have given great satisfaction. About the only complaint that is generally made against such varieties as Houghton's Seedling, Downing and others is the small size of the fruit when compared with the best imported or so-called English varieties, although the discrepancy in size may be made up in the greater abundance of the berries.

By many persons Houghton's is regarded as a hybrid between our native *Ribes oxycanthoides* and some garden variety of the foreign species rather than a simple improvement of the *R. oxycanthoides* or some other species, as sometimes stated. Whatever its origin, it is a good illustration of the line in which progress may be made.

Ribes oxycanthoides, or *R. hirtellum* of some botanists, is one of our commonest native Gooseberries. It is a medium-sized bush, with rather slender stems and slender prickles. The berries are produced on short stalks, and usually have a sweet, pleasant flavor when fully ripe; they are purple and have a perfectly smooth skin. On account of the small size of



Fig. 51.—*Populus Monticola*, in Lower California.—See page 313.

Notes on Trees and Shrubs.

WHEN we look back to the original or wild type of the common Gooseberry of European gardens and imported into our own, we ought to have much hope of evolving some excellent horticultural varieties from our native species by careful selection and cultivation, although this process may take many years before we achieve any success as marked as that which the patient cultivators of the Old World have won after centuries of work. Beginning with a much-branched prickly shrub bearing small yellowish or greenish berries, usually sprinkled over with stiff hairs, but occasionally glabrous, or nearly so, and usually less than half an inch in diameter and a quarter of an ounce in weight, the European cultivators have so improved their native Gooseberry, *Ribes Grossularia*, that some varieties bear fruits two inches in diameter and an ounce and a half in weight, while the innumerable varieties are classed according to color as red, yellow, green and white. It may be argued that having already attained such variety and seeming perfection in the European species it is scarcely necessary to start out on a new and possibly parallel line, especially as the European Gooseberry is quite hardy in cold climates, though probably not so resistant as some of our natives. But the imported Gooseberry in this country does not seem to grow to such perfection as it does in

the wild fruit, however, this species is not as promising as some other kinds of native Gooseberries.

Ribes Cynosbati, for instance, seems to have been almost totally neglected by horticulturists, although some good results might be expected from a comparatively short series of careful experiments and selections. To start with, the wild fruit is commonly twice the size of that of *R. oxycanthoides*, large, nearly round berries fully half an inch in diameter not being unusual. When fully mature the berries, although rather thick-skinned, are often sweet and very pleasant to the taste, being usually at that time of a brownish purple or greenish purple color. Ordinarily these berries are covered by numerous long, stiff, formidable-looking prickles, which, if they could not be eliminated, would prove a permanent objection to the cultivation of the fruit. But plants with perfectly smooth berries are not rare in a wild state, and individuals with or without prickles on the fruit may be raised from the same lot of seed collected from one plant. The berries are produced either singly or two or three together, on slender forked stalks an inch, more or less, in length; and they are often very abundant. This species is perfectly hardy, being found wild far north into Canada and west to Minnesota. Its stems are not so prickly as those of the European Gooseberry, and varieties practically without prickles should be easily procured. Hybridizing with the best forms of the cultivated

European Gooseberry should bring out some interesting results.

There are other species of native Gooseberry, such as *Ribes rotundifolium* and *R. Lobbii*, of the Pacific slope, which will yet prove of economic value, if, indeed, their usefulness has not already been locally demonstrated; for, although the fruits may be smaller than those of *R. Cynosbati*, they are often very appreciably larger than the berries of *R. oxyacanthoides*.

Arnold Arboretum.

J. G. Jack.

Crops in an Orchard.

IT seems a long time to wait for the fruit of a young orchard, especially an Apple-orchard; and with many it is important to utilize the land for other crops, while the orchard is growing. An experience of upward of forty years in planting orchards and managing them, does not, indeed, qualify the writer to utter the last word on such a subject; and, in fact, location must have much to do with it. All my experience in this business has been gained where a good market was within short driving distance. Consequently, I have planted in my orchards mainly the smaller fruits which come into bearing quickly and furnish an income with but little waiting. Young fruit-trees of the same or other species with the orchard may be safely grown between the permanent rows; while between the trees in the rows there is an excellent opportunity to plant such small fruits as Currants and Gooseberries. These may profitably remain until the trees come to full bearing, or at least for ten years. I have also grown Rhubarb and Asparagus in young orchards, between the rows, for as long a time, without any injury to the orchard.

After growing one or two nurseries of trees between the rows, I have found no crop so satisfactory as Beans. These seem to do even better in partial shade than in the full sunlight. I am still growing Beans in an orchard fifteen to twenty years planted, getting full crops, which pay for their own manuring, and leave a good deal for the trees. There is no better mulch for young fruit-trees than bean straw, in which I have never known mice to harbor, and which in its decay furnishes an effective fertilizer.

Strawberries do fairly well in a young orchard for six or seven years; but the beds of these must be narrowed as the branches and roots of the trees extend themselves; and, in fact, four years are about as long as I should want to continue them.

Corn is a good crop in a young orchard, as it does not attain much growth until most of the tree-growth is made. It is better to plant Sweet Corn, the ears of which are to be sold green, and the stalks then cut for green feeding to cows.

Potatoes are an injurious crop in an orchard, as the growth is simultaneous with that of the trees. There are a number of garden-vegetables which do well for several years. I have many times grown good crops of carrots in an orchard, even after the trees had acquired considerable size, the short-rooted sorts being preferred.

All of this, of course, presupposes liberal fertilization, which in my practice is alternately with stable-manure and with fertilizers. With stable-manure Corn has appeared to me to be the best crop, the unconsumed manure, with the Corn-roots and stubble, being very acceptable nourishment to the young trees. A fall crop of flat turnips can often be taken successfully from a young orchard without harm.

All this must be understood as done under pretty high culture, with free use of manures. Nothing to check the growth of the trees is allowed, as that is the main objective point. But it is astonishing to an inexperienced observer how much of useful and profitable growth can be taken in this way from a young orchard, and the practice especially aids the grower to accord to the orchard that feeding and cultivation which it needs, and which is often necessarily grudged and withheld when no immediate return is hoped for. The suggestion came naturally to me at first from seeing how well fruit-trees do when planted in well-kept gardens, and it is, in fact, only an extension of that practice. I have never seen any injury result from it, and might easily cite other advantages.

Newport, Vt.

T. H. Hoskins.

Chrysanthemums.

UNDER a thorough system of stopping their shoots, specimen plants should now assume a neat regular outline. Additional supports should be added and some tying done to get them still further into shape. There should be a proper distribution of the shoots, and, if necessary, stunted growth should be cut out, so as to admit light and air freely all through

the plants. Well-preserved foliage is of scarcely less importance than fine blooms. With the exception of some late kinds, such as C. B. Whitnal, White Cap, Mrs. H. J. Jones and a few rather straggling growers which need to have runaway shoots stopped later, all should now be allowed to grow. They should be syringed freely on all bright days. This tends to keep down insects and promotes the growth of clean healthy foliage.

The application of stimulants is a work requiring very great care, and only experienced persons should be entrusted with it. The pots must be filled with healthy roots, and the drainage free, to begin with. No excess of solid matter ought to lie on the soil, to prevent the free passage of water. If cow-manure be used as a top-dressing it should be first dried and then broken into small pieces. This acts as a mulch and fertilizer as well. As a safe and lasting fertilizer, applied as a top-dressing, we prefer pulverized sheep-manure, with just a dash of sand and loam to keep it open. Liquid-manure may be applied also if the plants continue healthy. It should be given often, say, once a week at first, and two or three times a week later on, but never at any time very strong. Drainage from stables is one of the best fertilizers known, as it contains nearly all the ingredients of a complete plant-food in a concentrated form. I seldom use it stronger than one part in twenty of water. If bituminous soot can be obtained it is beneficial, and may be used with some device for filtering water through it. Droppings from the hen-house are dangerous when used in any quantity in this way. Where lime is not an ingredient of the soil, a pound or two once in a while will do good work. Sulphate of ammonia is sometimes used with wonderful results, but unless its strength be known it is not quite safe. Among commercial fertilizers guano ranks high. It does not, however, contain all the elements required, and so gives better results when used alternately with other manures. Guano is best applied in the liquid form, and while it may be safe to use more than one pound to fifty gallons of water, I confine myself to this limit. When applying commercial fertilizers occasional plants will not be able to stand the regular dose, which will be shown by the leaves turning pale green; these should be passed until they resume their natural color, and always after that a smaller quantity should be given. At the same time, when clear water only is used, they should have no more than enough to keep them from wilting, for a few days. This gives the soil a chance to sweeten.

Plants for specimen blooms ought to be making strong growth, and they, too, will need a little extra plant-food. The mixture recommended for specimen plants will be found the best for them. All side-shoots should be carefully taken off, and crown-buds which are too early taken out, and one or two shoots, as may be required, allowed to grow. Charles Davis, good only on a crown, may be taken any time, as may also Lady Playfair, Mrs. E. G. Hill, Mabel Simpkins, Mayflower, Yellow Queen. Domination, Ivory, Cullingfordii, G. W. Childs and Vivian Morel are best on terminals, and crowns appearing now on these should be removed.

Wellesley, Mass.

T. D. Hatfield.

Hardy Plants which Flower in late July.

LILIU NEPALENSE, a species from the central Himalayas, has flowered here in the open ground from a bulb planted in May. I have seldom seen a more healthy plant, and though it is said to be a greenhouse species, I shall leave it in the ground during winter, well protected from frost. It attains a height of about two feet, bearing one to several white flowers, purple inside toward the base. The flowers are about five inches long and nodding.

Lilium superbum, var. Carolinianum, is a distinct form which flowers about midway between the seasons of L. Canadense and the true L. superbum. It is more dwarf in size, and its petals are more reflexed, being turned back about as much as those of L. Columbianum when fully matured. It is perfectly hardy and thrives in situations adapted to L. Canadense.

Campanula Carpatica alba is a very prolific bloomer and bears its charming white flowers, a little more than an inch wide, on stems of fairly good length for cutting. C. Ræneri, about the same size, blooms with it, but its flowers are blue and a little smaller.

Platycodon grandiflorum and P. Mariesii are two desirable plants, with large deep purple-blue bell-shaped flowers, quite hardy and easy to grow. The variety Album, of P. grandiflorum, is very desirable.

Aster Douglasii, from northern California, is much earlier than most of our native Asters. It produces flowers in the greatest profusion, which are nearly white and about three-

fourths of an inch across: Aside from its comparative earliness it is of no more value than many of our most common species.

Pentstemon gracilentus, from northern California, has a greater number of flowers on a panicle than most species of this genus, though they are individually small. They are about three-fourths of an inch in length and purple in color.

One of the more striking plants just flowering now is the perennial Globe Thistle (*Echnops Ritro*), from southern Europe. The large round heads of blue flowers are quite attractive.

The Cardinal Flower (*Lobelia cardinalis*), which is so commonly found gleaming among the rank vegetation on boggy soil, does admirably treated as a garden-plant. It takes kindly to drier land, and when properly cultivated it attains a greater height, with longer spikes of its deep cardinal-red flowers. It blooms earlier, too. *Rhexia Virginica*, the Deer Grass or Meadow Beauty, is another attractive native plant at this season in the border, where it attains a height of about ten inches, bearing numerous rose-purple flowers an inch across.

Charlotte, Vt.

F. H. Horsford.

Notes from Cornell University.

CURRENTS.—Mr. S. D. Willard, of Geneva, recently sent specimens of the Wilder currant and of the White Imperial currant to the station to be tested. The Wilder is a red currant with stem and berries as large, or larger, than the Fay's Prolific, and a little less acid than Fay's. It is a beautiful variety and promises to be a valuable acquisition to commercial curants. No currant as sweet as the White Imperial has been tested here. The clusters and berries are of good size when compared with the White Grape; the difference in acidity seems as great as that between sour and sweet cherries. This variety can be highly recommended for family use. A new variety, which resembles the Versailles in cluster and berry, was received from Albertson & Hobbs, Bridgeport, Indiana. Its favorable points are less acidity than Versailles and the small number of seeds which it contains, each berry having only from three to eight.

SWEET CORN.—A test of sixty-one varieties of Sweet Corn is being carried on at the station. The Corn stands on a piece of ground that has received uniform treatment for the past ten years. The object of the test is to determine the earliness, productiveness and quality of each variety. The stalks of each kind have been counted and a record is made of the tasseling, of the appearance of silks, of the first roasting ears and of the yield. The Corn has received high cultivation, and with the uniform conditions the results should be fair and reliable.

CLUB ROOT OF CABBAGE.—This fungus (*Plasmodiophora Brassicæ*, Wor.), which has been quite destructive to the Cabbage and Turnip crops in New Jersey, and in the truck-gardens around Philadelphia and New York during the past few years, is receiving attention from the station. The disease is caused by a fungus, which causes the roots to become swollen and distorted. It affects the cabbage and vegetables belonging to the Cabbage family, and also the Shepherd's Purse (*Bursa pastoris*, L.), and the Hedge Mustard (*Sisymbrium vulgare*, L.) Two barrels of soil, in which the disease had been prevalent, were imported from Long Island in the spring, and Cabbages set in the plot in which the soil was mixed. Every plant examined has the disease and is rendered useless for market purposes as growth ceases. This shows the highly infectious character of the disease. As the fungus is known to live on certain kinds of plants only, Buckwheat will be sown on part of the plot to determine whether the fungus can be starved out in one season.

Cornell University.

G. Harold Powell.

The Kitchen Garden.

MOST vegetable-gardens in this vicinity now present a sorry spectacle on account of the parching drought, but even in places where irrigation is not practicable, if the surface has been kept constantly stirred the lack of rain will not be so seriously felt. Of course, it is always in order to kill weeds, one great reason for this being that the weeds are taking the water which the plants need. But, as has been often explained in GARDEN AND FOREST, this surface tillage has a value beyond the mere destruction of the weeds, and it is most useful when the weather is dry and hot, as it generally is in midsummer. The ground should not be stirred so deeply now that the moist soil is brought up from below, for the water evaporates and is wasted, and just now every drop of moisture should be husbanded with care. Evaporation goes on from the surface, and the loosening of a thin layer of

top soil acts as a sort of mulch or a blanket full of air-spaces, and checks the waste of the water which rises from below. So far as possible all the water that now escapes from the ground should be utilized—that is, it should be taken up by the roots and pass away through the leaves of the plant.

Where the ground is not dust-dry, varieties of Peas which grow low and ripen rapidly may now be sown, for, although the autumn crop of this vegetable is precarious, the vines will sometimes escape mildew and yield fair crops before frost. Some Cucumber-seed may still be planted in frames, where the plants can be covered before the earliest frosts. From plants now in bearing the mature fruit should be picked every day, and they will continue producing longer than they will if seed is allowed to ripen. Fresh tobacco-stems scattered among them will repel plant-lice. Caution should be used not to step on the plants when picking cucumbers and melons, and in the case of melons more perfect fruit can be had if pieces of board are placed under them to keep them off of the ground.

Late Turnips for table use should grow quickly if they are to be crisp and sweet, and such growth is made in cool autumn weather. The latter part of August is abundantly early to sow such varieties as Purple-top, Strap-leaf or the Flat Dutch. When grown to the largest sizes, these are not fit for table use, and this is another reason for late sowing. Of course, the ground should be rich to insure the quick growth, which is a prime necessity. The flea beetle often attacks the plants as soon as the earliest leaves appear, but this insect can usually be driven away by a sprinkling of slacked lime. If the lime alone will not suffice, a little Paris green can be mixed with it in the proportions, say, of one part of Paris green to two hundred parts of lime.

It is hard to grow good crisp Lettuce in hot and dry summer weather, but the middle of August is a good time to make a sowing of seed to head in frames, and another sowing should be made the last of the month, and this can be used in late autumn, and even up to Christmas.

New York.

S.

Strawberries.—If a Strawberry-bed is to be kept for one or more years, it should be worked over as soon as possible after the crop is gathered, in order that the new plants may find a soil in suitable condition for starting into growth. If the field contains much grass and tall weeds, it is often a good thing to cut them with a mower, and if there is so heavy a mulch that it will hinder working the land, it can often be burned off. The fire will also destroy many insects, and, as the old Strawberry-leaves will also be burned, most of the spores of the leaf-blight will be destroyed and the injury the following year lessened. The bed may be broken up in various ways, one of the best being to turn furrows away from either side of the row, leaving only a narrow strip with plants upon it. The furrows can then be worked down with a cultivator, and the rows of plants thinned out and freed from weeds with a hoe. In this way the ground will be broken up and prepared for the new plants that will be formed. Especially if the summer is a dry one, the cultivator should be kept going throughout the month of August, so that a crust cannot form. The new plantations also should receive similar care, so far as cultivation and hoeing are concerned. One of the principal reasons for the running out of varieties is that they become subject to and weakened by the rust or leaf-blight. In the case of some varieties, much of the foliage is entirely destroyed, and the spots are so numerous upon the flower-stems that they are girdled, and as a result they shrivel and the fruit dries up. From this cause half the crop is often lost. It has been found that this disease can be kept in check if the plants are properly sprayed with Bordeaux mixture. This should be put on in July or early in August, in order that the plants may make a healthy growth during the fall. This should be repeated in the spring before the growth starts, and again as soon as the blossoms are off. By the last application the flower-stalks will be covered with fungicide and the chance of the drying up of the berries is thus reduced.—L. R. TAFT, in the *American Agriculturist*.

The Forest.

Mixed Oak and Beech Forests of the Spessart: Management by the Bavarian Government.—III.

REGENERATION OF THE OAK BY SELF-SOWN SEEDLINGS.

THE third special point to which the attention of the Bavarian Government was directed was the regeneration of the Oak. At first these mixed Oak and Beech woods were treated uniformly on the usual plan, the mature timber being removed gradually by successive cuttings, so as to

allow self-sown seedlings to spring up and to afford shelter to the young growth. Under this plan some Oak would come up among the Beech, more in places where the Oak predominated, less where single trees were scattered among the Beech. Gradually, however, it was discovered that in the Spessart the Beech had a much more vigorous growth than the Oak; that Oak-saplings standing alone in a mass of Beech were, as a rule, doomed to extinction, and that of groups of Oak surrounded by Beech a few trees only would remain, the rest being overtopped by the Beech. Great exertions were made to save the Oak by cutting away or lopping the Beech which threatened its existence. But it was soon seen that this was a gigantic task, which, over such large areas, could never be fully accomplished. Hence attempts were made to establish large patches stocked with Oak, and thus to facilitate their protection against encroachment by the Beech.

The plan followed until about 1865 was briefly this: On the occurrence of an Oak-mast everything was done to promote the springing up of Oak-seedlings in those compartments where the working-plan permitted such operations. In those compartments, therefore, in the vicinity of all Oak-trees which had produced acorns, the greater part of the Beech was cut, leaving only a proportion of smaller and younger trees to serve as shelter. Whenever necessary the ground was dug up, generally in lines, or it was otherwise made raw to facilitate the springing up of Oak-seedlings. The result was that extensive thickets of Oak sprang up wherever in the compartment selected there had been seed-bearing trees. The intermediate space, which was occupied by pure Beech, was left untouched until it was convenient to take it in hand, and then, on the occurrence of a Beech-mast, it was regenerated in the usual manner by means of successive cuttings. In this manner two classes of young forest were obtained—irregular plots varying in size, where the Oak predominated, not pure, for Beech-seedlings would spring up among the Oak, and the intervening space stocked with pure Beech. With careful management it obviously was possible in this manner somewhat to extend the area stocked with Oak, and the good results of this system are seen in extensive young woods, now from thirty to seventy-five years old, in which the Oak predominates.

These young woods are singularly beautiful, the Oak, having from the commencement been associated with the Beech, has formed straight clean stems without side branches, the bark without lichens, of a beautiful silvery-gray color. But these mixed woods have this disadvantage that the Beech is apt to overtop the Oak, and unless cut out or cut back frequently it gets the upper hand and kills out the Oak. These young woods therefore demand constant attention, and the operation of cutting down or lopping the Beech which threatens to interfere with the Oak costs money.

LARGE OAK AREAS RAISED BY SOWING ACORNS.

The chief drawback, however, was found to be that a really considerable extension of the Oak-woods could not be effected by the natural method, and hence the artificial formation of Oak-wood was more and more resorted to. Great experience has now been gained in this matter, and the result of this experience has developed a very perfect system. The acorns are sown broadcast, the entire area being dug up, or in dug-up lines two to three feet apart, the acorns being sown thick in the lines. Should there be young Beech on the ground it is cut down, or if not too large pulled up.

At first alternate bands sixty to seventy feet wide were sown with Oak, the intervening bands being regenerated naturally as Beech-woods by successive cuttings. This plan answers well where the soil is uniform; a much better arrangement, however, which is now generally followed, is to select localities with deep and rich soil for the Oak, and to leave places with poor, stony and shallow soil to grow the Beech on, or, where necessary, to raise Scotch

Pine and Spruce. These places suitable for the growth of the Oak are selected long beforehand and are marked out on the ground. Only acorns grown in the Spessart are used, and as acorns do not keep, this system depends upon an Oak-mast occurring in this locality nearly as much as the system of natural regeneration. There is, however, this difference, that small quantities of acorns are produced almost every year, and that these can be utilized in sowing some plots which are sufficiently advanced for the reception of the acorns. Obviously, however, the main sowings can only be made when a good mast year occurs.

The plots selected for the growth of Oak are not much smaller than an acre, and are sometimes as much as twenty acres in extent. On these places the forest is cleared, a number of the smaller trees being left to serve as shelter to the young Oak. For a year or two the ground is left untouched, exposed to rain and sun. The result is that the dense cover of dry leaves decomposes sooner, and when the first thin coating of grass makes its appearance the time has come to bring in the Oak. The surrounding Beech-forest, which had been left untouched, is taken in hand for regeneration in the usual manner, and wherever this can be done it is arranged that the Oak shall have a few years' start of the Beech. Around all Oak plots narrow paths are cleared to prevent the margin trees being overtopped by the Beech. The Oak areas within a compartment at once strike the eye by the dark green of their foliage, and they stand out clearly from the lighter green of the surrounding young Beech-woods. These Oak areas, being the most important portion of the forest, are objects of constant interest and frequent visits by forest-guards, executive officers and inspecting officers. Isolated Beech-trees, which frequently spring up among the Oak, are not disliked, and in these limited areas they can more readily be kept under control than when the Oak is scattered over large areas.

Bonn, Germany.

Dietrich Brandis.

Correspondence.

Woad Wax.

To the Editor of GARDEN AND FOREST:

Sir,—I learn from the article by Mr. Jack, in your issue of August 1st, that correspondents of the Boston newspapers are exercised over the possibilities that Woad Wax may become a pestilent weed. But, in the light of comparatively recent scientific discovery, is it not possible that this plant may prove a blessing? Certainly, leguminous plants differ from others in their relation to the soil. As a rule, plants which grow and die down on a piece of ground add nothing whatever to it except some carbonaceous matter which they have taken from the air, and which is not really plant-food. For a hundred years farmers have been claiming that Clover actually enriched the soil, and that even after the crop was cut off and carried away the land was rendered more fertile by the decaying roots. Men of science pronounced this impossible, but Sir John Bennett Lawes found by analysis that soil in which Clover had been grown contained more nitrogen than it did before the seed of the Clover was sown. Nevertheless, since the leaves of plants do not take up the free nitrogen from the air, and since the roots cannot get it, the men of science argued that the long fibrous rootlets of the Clover must bring up the nitrogen of compounds already in the lower strata of the ground, often from a depth of several feet below the surface. More recent discoveries have shown that leguminous plants have the power of obtaining nitrogen directly from the air, and that they are enabled to use it as plant-food by the help of microscopic organisms, which are always found in the soil where these plants grow. Just how this is accomplished the scientists have not yet been able to explain fully. What seems to be established is that these bacteria cause the growth of little tubercles on the roots of the plants, and somehow through these the nitrogen is assimilated.

Now, this Woad Wax is a leguminous plant. Its roots are covered with these little nodules, which show that the bacteria are at work preparing the nitrogen of the air, to be taken up and used in the plant. Such plants as the Clovers, Serradella, Alfalfa, Lupine and Cow Peas are often used for green manuring, as it is called—that is, they are turned under for the

express purpose of adding to the soil the nitrogen which the plant has taken from the air. This process pays, because, while the other elements of plant-food which are lacking in unproductive soils—namely, potash and phosphoric acid—cost only five or six cents a pound, nitrogen costs three or four times as much. Now, may it not be that this Woad Wax is helping to enrich the wastelands of eastern Massachusetts, instead of impoverishing them? If Woad Wax will thrive where little else will grow, why not encourage it? Perhaps it might be worth while to plant it and to plow it under as a green manure. Like many other leguminous plants, it may need a special form of bacteria to aid it in capturing nitrogen. Peas, for example, sometimes fail to grow unless nitrogenous manures have been furnished them, but on the same lands, if a light dressing of soil, in which Peas have been grown before, is given to the land, the crop will grow without the application of any nitrogen except that furnished by the air. This means that the top-dressing has inoculated the soil with the special bacteria which live in connection with the Pea-roots. It might, therefore, be necessary, in order to insure the growth of this Genista in any worn-out land, to inoculate it with a dressing from soils where it has grown before.

Perhaps the directors of some of our experiment stations may consider this subject worth attention.

New Brunswick, N. J.

R. S.

[Our correspondent has fairly stated, in a popular way, what is known as to the power of plants of the Pulse family to store up nitrogen from the air. In many cases soils can be enriched with nitrogen cheaply and effectively by plowing under crops of Cow Peas and other legumes. We are hardly prepared to recommend the cultivation of Woad Wax for this purpose. Plant crops which can be utilized as food for animals would plainly be preferable in situations where they can be grown. Nevertheless, the suggestion that Genista Tinctoria may prove an instrumentality of bringing up sterile soils to a condition of comparative fertility is worth considering, and we should be glad to hear from other correspondents to whom the subject is interesting.—Ed.]

Seedlings from the Shaffer Raspberry.

To the Editor of GARDEN AND FOREST:

Sir,—In your issue for July 1st, page 288, I note that Mr. Powell writes: "So far [referring to the Shaffer Raspberry] all of its seedlings turn out to be pure black, and none of them remarkable in any way." This is much at variance with my experience with them. In 1891 we sowed a small amount of Shaffer seed from plants growing near those of Marlboro and other varieties, but without any effort at cross-fertilization. From this sowing about four hundred seedlings were raised, the most of which fruited last year, but none of them showed pure black-colored fruit, and that of most of them was a dull red, occasionally a purple, with a few bright red. The fruit from thirty-eight plants was considered worthy to be sent to the Exposition last year. The canes and general appearance of most of the plants plainly showed the Shaffer parentage. A few plants, perhaps half a dozen, resembles the Black-cap in cane and general appearance. All those selected as being of possible value closely resembled the Shaffer, and all are difficult to propagate from the tips.

Experiment Station, St. Anthony Park, Minn.

Samuel B. Green.

Recent Publications.

Fungi and Fungicides. By Clarence M. Weed. New York: Orange Judd Co.

This is not a work for scientific students, but a practical handbook which explains the various methods, so far as they are known, of preventing and curing the ordinary fungous diseases of cultivated plants. The book makes no pretense of originality, but is a compilation of matter which, during the last few years, has been published in various bulletins, reports and periodicals in relation to the life-histories of fungi which are destructive to plants, together with the characters of the diseases they cause, and the approved ways of treating them. In the introduction Mr. Weed gives some data from which we can form some estimate of the losses which are caused by these diseases. A Commissioner of Agriculture has stated that corn and

wheat, to the amount of \$200,000,000 at least, are annually destroyed by fungi. It is probable that fruit suffers in even greater proportion than field crops. For example, the loss from the apple-scab ranges from one-sixth to one-half of the entire product. In one year the loss of peaches from the brown-rot in the Chesapeake and Delaware peninsula alone was half a million dollars. Rots and mildews cause losses in the grape crop that are almost incalculable.

Ten years ago there were not a dozen scientific men in this country who were giving serious study to the diseases of plants from an economic standpoint, but in almost every experiment station now the subject of plant-diseases is one of the regular lines of work, and it is largely owing to the investigations in these stations that we have learned the cause and cure of the potato-scab, and have become familiar with the Bordeaux mixture and other fungicides in treating Pear leaf-blight, apple-scab, raspberry anthracnose, Plum leaf-spot and potato blight and rot. This little book only treats of the more destructive and widely spread diseases, and especially of these for which some more or less successful treatment has been discovered. After a few pages of introduction, in which some of the elementary facts in regard to the life-history of fungi are given, the fungous diseases affecting the orchard fruits are first discussed, and then those affecting the small fruits. The diseases affecting shade-trees, ornamental plants and flowers, kitchen vegetables, cereals and forage crops are then discussed in order. Altogether, the manual is convenient and ought to prove useful, as it contains facts with which every gardener and fruit-grower ought to familiarize himself.

Periodical Literature.

Mrs. Katherine Brandegee has just published, in the *Proceedings of the California Academy of Natural Science* (ser. 2, iv., 173), the results of a long and careful study of the difficult genus *Ceanothus*, which, finding its greatest development in California in many beautiful species, makes in early spring one of the most conspicuous and attractive features of vegetation, especially in the Coast-range region south of the Bay of San Francisco. The last study of these plants was that of Dr. C. C. Parry, published in the fifth volume of the *Proceedings of the Davenport Academy of Science*, where thirty-two species were recognized, and where, for the first time, the prevalence of natural hybrids in this genus, the ease with which these may be recognized in the field, and the corresponding difficulty of their separation in herbaria, were pointed out. According to Mrs. Brandegee, "the hybrids of *Ceanothus* are found wherever two species of the same section grow together. As a rule, to which there are, however, many exceptions, no two species of the same section occupy the same area. Either one grows at a higher elevation or at a different exposure, and the hybrids occur along the lines of junction. They seem usually to be fertile, and show every gradation from one to the other parent.

"*Ceanothus* is very readily and completely killed by the fires which so frequently run over the chaparral hills of California. About the places where their parents grew the seedlings then spring up in great numbers, although they are otherwise rarely seen. A certain proportion of these seedlings are always, where two different forms have grown intermingled, found to be hybrids. If the district should be again swept by fire before the seedlings bear fruit the species in that locality would be exterminated, with, perhaps, an occasional sheltered exception, which may almost as readily be a hybrid as one of the parent forms. In this way, as may readily be conceived, a fertile hybrid might become established as the prevailing form in a given district. Where the seedlings survive in great numbers, cross-fertilization being made certain by the swarms of insects attracted to their fragrant flowers, a continual crossing takes place, not only between the original forms, but between the hybrids and their parents on either side."

In this paper the number of species is reduced to twenty-one, divided into two sections, Euceanothus, and Cerastes with the three closely related species which Mrs. Brandegee suggests may, perhaps, best be treated as varieties of one. In addition to species many hybrids are described. Under each species the original description is published verbatim, because "the modification which descriptions undergo by increasing knowledge of their variations is often very great, and it seems to me the duty of monographers to give the original diagnoses in addition to their own, so that readers may be in possession of the data necessary to form some sort of independent opinion without the necessity of acquiring a considerable library."

Although Mrs. Brandegee does not consider her study of Ceanothus final—indeed, it will never be possible to elucidate for all time the species of a genus in which so many varieties and hybrids are constantly occurring—it is, nevertheless, a very substantial and useful contribution to our knowledge of one of the most difficult, as it is one of the most interesting and beautiful, groups of plants in the flora of North America.

Notes.

Hibiscus Syriacus, the European Shrubby Althea of gardeners, is reported as thoroughly established in a wild state about Stone Mountain, in Georgia.

Mr. J. A. Pettigrew, for many years the efficient Superintendent of Lincoln Park, Chicago, has been appointed Superintendent of the park system of Milwaukee.

Mr. F. Le Roy Sargent, of Cambridge, Massachusetts, has recently published a little pamphlet called *How to Describe a Flowering Plant*, which consists of detailed directions for analysis, based upon Gray's *Lessons in Botany*. Such a work ought to prove useful to beginners in botany.

The report of the first convention of Ontario Good Roads Association has just been published by the Department of Agriculture of that province. The proceedings, together with an instructive appendix on various practical subjects connected with road-making, fill a neat pamphlet of sixty-four pages.

The Pennsylvania Forestry Association has offered a prize of \$50 for the best essay and \$25 for the second best essay prepared by teachers in the public schools in that state, upon the "Practical Value of Forests to the Surface of the Country." The teachers everywhere in the state are invited to enter the contest.

An application of Bordeaux mixture or some other good fungicide should be given to Gooseberry-bushes after the crop is harvested, as a check to the mildew. This enables the plant to hold its leaves late and to thoroughly ripen the wood for the next year's crop. This late application is quite as necessary as the early ones if good crops are to be had every year. The same treatment should be given to Currants.

This is the time to prepare window-plants for winter-flowering. Cuttings may be taken of soft-wooded plants like Geraniums, or medium-sized plants in the garden may be taken up, cut hard back, both roots and tops, and placed in pots just large enough to contain them. If they are set in a cellar or in a shady frame where the air is close, or, at least, where the wind does not dry them out, and kept well watered, they will make good roots very soon and they will be well established for the winter.

In an address before a horticultural society in the state of Washington, Mr. M. C. Latta stated that Currants in that state set three feet apart in rows six feet from each other, would, at a conservative estimate, produce when in full bearing—that is, the fourth year after planting—an average of seven pounds of fruit to the stool, or about 17,000 pounds to the acre. Such an estimate may be conservative on the Pacific coast, but growers hereabout would not complain if their Currant-fields yielded an average of three or four tons less than this to the acre.

In some notes on the White Pine in the last number of *Forest Leaves*, Professor Rothrock notes the behavior of the leaves of this tree under various climatic conditions. Clusters of these leaves start from a single point, and in clear weather they separate and stand away from each other so as to form an open

whorl. Under these conditions the tree-top is a mass of feathery foliage. When the weather is cold and damp the leaves close in upon each other and droop until the entire expression of the tree is changed and the top becomes open so that one can look through it in almost any direction.

Rarely do our farms and gardens suffer from a drought so widespread and prolonged as the one which now prevails in the Atlantic states. Almost every year, however, there are localities in which special garden-crops at different seasons entirely fail for lack of rain. The gardens in this region should now be yielding an abundant supply, but a greater portion of them are not producing a single vegetable for home use. This is a hardship which can hardly be appreciated except by those who live at a distance from great markets which lay under contribution the products of a continent. In regions of rainless summers where irrigation is a necessary practice such hardships never occur, but it would seem wise if provisions for watering the home-garden, at least, should be made in climates where the rainfall is usually sufficient. There are few farms in the middle states where the vegetable-garden could not be so placed that it could be irrigated at small expense. At such a time as this facilities for watering garden-crops would save a good deal of money in many rural households, besides adding materially to their comfort and health.

The beautiful Honeysuckle, *Lonicera flava*, Sims, is one of the rarest and most local plants, being known, until recently, in only two localities—on the summit of Paris Mountain, in South Carolina, and in one spot in the upper districts of Georgia. Now Mr. John K. Small reports in the *Bulletin of the Torrey Botanical Club* that he found it last spring "in full bloom on the summit of Little Stone Mountain, Georgia." This mountain, he tells us, is a flat granite dome about nine miles distant from Stone Mountain itself, rising about one hundred and fifty feet above the surrounding plain; the slopes are nearly bare, consisting of flat granite pavements, but a small area of the top is capped by a layer of sandy soil several feet thick. This is covered by a rather dense growth of shrubs and trees, except the highest point, which is several square yards in extent. Here three plants of *L. flava* grow, spreading over the undershrubs and the ground. It is a most handsome plant when in flower, and on a second visit in July the abundant fruit was just about maturing. During a month's exploration of the vicinity no other station was observed, but at a later trip Mr. Small found several plants growing in the woods on northern cliffs of the mountain.

The first Flame Tokay grapes of this season from California were sold here last Monday, together with a variety known as St. Jacob. Some Fontainebleaus, small white grapes, arrived last week, and these were the first grapes received from California. Tuscan, Bernard and Amelia peaches are among the latest receipts, the latter being a large white-fleshed variety, valued for drying. Large yellow peaches, like Early Crawford and St. John, from Maryland and Delaware, have sold as high as \$2.50, wholesale, while the best baskets of Troth and Mt. Rose have only brought \$1.50. Among plums not noticed before are the Hungarian prune, the true name of which is English Pond's Seedling, a very showy fruit of a reddish violet color, with a handsome bloom; Glaister, not unlike the Yellow Egg plum; Burbank's Satsuma, a round deep red fruit, and the Diamond, Walling, Bulgarian, Gross and Magnum Bonum plums. Royal Anne and Black Republican cherries continue to arrive, and in the seventy car-loads of California fruit sold here last week were large Howell pears, and the Souvenir du Congrès, a bright yellow pear with brilliant red coloring, suggesting the Bartlett in this respect, though it lacks the high flavor of this favorite. Alexander apples, from California, a very large greenish yellow fruit, sell for \$1.75, retail, for a box containing five dozen apples. The best apples from New Jersey and the Hudson River district are the Orange Pippin, Nyack Pippin and choice Astrachan, which are worth \$2.50 a barrel at retail. The Cuban pineapple season is ended and the Florida season for this fruit is drawing to a close. Some large garden-grown pineapples from Florida, known as the Cayenne variety, with showy luxuriant tops, sell as high as six dollars a dozen at wholesale. North Carolina is sending Ives, Concord and Moore's Early grapes, and large quantities of the red-fleshed Christina muskmelon come from Norfolk and from New Jersey. Notwithstanding the smaller supply of vegetables, on account of the drought, prices are about one-fifth lower than they were a year ago. Sweet-potatoes, for example, sold then for \$3 to \$4 a barrel, while \$2.50 is the highest price paid at this time.

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New Statues in New York.

NO one doubts that a fine piece of sculpture greatly ornaments an urban park, square or street, and benefits the public by giving pleasure and by increasing the desire and appreciation for art in general; and if it commemorates a citizen who deserved well of the Republic, it may play a potent part in stimulating patriotism and all right ambitions. Unfortunately, however, it is not as yet generally recognized that the value of a statue as an educational influence in historical, biographical and patriotic, no less than in artistic, directions, depends altogether upon its right to be called fine—upon its excellence, its interest and its charm as a work of art.

We have heard it said: "This is to be merely a portrait-statue; therefore the main thing is to get a good likeness; it matters much less whether or not it is remarkably good as a work of art." But these are not intelligent words. Individuality of conception and skill in execution are, not less, but more, important in works of portraiture intended for the public's gaze than even in so-called idealistic works. In the latter the artist is sure to have had the wish to produce a beautiful result, for otherwise there would have been no reason why he should attempt his task at all; and even if he fails to conquer all difficulties, yet there will probably be something in his work that will please us if only by contrast with the monotonous aspect of the inartistically clothed people whom we meet daily in the flesh. But when a sculptor must reproduce one of these same people, his model, in the majority of cases, will lack all beauty except of that intellectual or spiritual sort which must exist in the facial expression of a man who has worthily risen to public eminence. Only the sympathetic eye of a really intelligent artist can see this sort of beauty, and only his skillful hand can translate it into artistic beauty; and then, as regards the remainder of the form, high artistic power is needed if the aspect of the average sedentary modern man and his ugly clothes is not to prove actually distressing to the eye when done in bronze. Imagination and technical skill are both needed for the production of really fine works of art of any kind; but, we are tempted to say, they are more needed in the case of a portrait-statue of a modern man than in any other task which could present itself.

If these facts were better understood by our municipal-

ities and our generous fellow-citizens, our cities would hear of proposed new statues with constant pleasure, whereas now a feeling of dread is always excited until the name of an artist of recognized eminence is pronounced, or until the actual work has been seen; and in a very large proportion of cases this dread is more than justified by the outcome. For example, five new statues have recently been set up in the parks and squares of New York: the Columbus, designed by a Spaniard, in Central Park; the Roscoe Conkling in Madison Square, the Greeley at the junction of Sixth Avenue and Broadway, the Ericsson in Battery Park, and the Nathan Hale in City Hall Park; and among these the last-named is the only one which can be called worthy of its cost and its place, either as giving pleasure to the eye, or as likely to inspire imitative ambitions and patriotic thoughts in the minds of our fellow-citizens.

As regards the latter point we speak, not from theory, but from actual observation and from records of significant facts. Some readers may admire the four statues which do not seem to us good, and may therefore say that they are worthy of their place as pleasing some eyes. But, let them take pains to notice how the general public is affected by them, and then compare the effect upon it of Mr. McMonnies' Nathan Hale, and they will be forced to recognize that, if the greatest good of the greatest number is to be sought in the erection of public memorials, only the Hale is making its right to existence plain. No other statue in New York, scarcely excepting the Farragut on Madison Square, has ever attracted so much popular notice as this picturesque, noble, interesting figure; and no other except the Farragut is entitled to be classed with it as a remarkably fine work of art.

The general public is, indeed, ignorant with regard to all the canons and technicalities of art criticism, and can give no reasons why it prefers one thing to another. But in these cases it has utterly disproved the beliefs of those who say that the best art is therefore wasted on it—that, if it cares for a statue at all, it cares for it merely as it might care for a photograph explaining how a great man's features differed from those of his fellows. The lesson our public has thus taught those who think that less than the best in art will please it, or that the best itself will not be appreciated, is all the more convincing because Nathan Hale was not a personage in whom, before it saw his statue, it took any interest at all. A year ago, we may safely say, Hale's name was probably unknown to our school children, or but vaguely remembered by them among the many minor names they had read in their American histories; and many of our most intelligent and well-educated citizens would have been puzzled to say just what his record was, and how he met his death, or why, or where. But now a little biography of Hale has been prepared for use in our public schools; the details of his execution have been discussed for months in the columns of our newspapers; every New Yorker has become familiar with his name and his titles to fame; and, thanks to the example of New York, the place where he was captured—Huntington, Long Island—is erecting a memorial in his honor. And all this has been brought about simply and solely by Mr. McMonnies' figure, and because it is an impressive, an interesting and a beautiful work of art. There is no hour of any day when people, often of the lowest classes, may not be seen gazing at this statue; and the charm it has for them has been reflected through the mental atmosphere of the whole city.

Thus a citizen who deserved well of the Republic has, at once and for-always, been assured his meed of popular recognition and admiration, and the education in patriotism of our citizens has been definitely advanced, while their eyes have been gratified and their taste for art has been stimulated. There is no citizen so dull but that he will perceive the difference between this statue and one lacking its good qualities. He may not be able to explain it further than to say, or to feel, that the one interests him

and the other does not. But he will always understand that some statues may please and interest him, whereas had he seen only poor works, he would have remained forever indifferent to the claims of art, and skeptical as to its possibilities of affording him pleasure. Among the thousands of men and boys who feel genuine pleasure every time they pass the Nathan Hale statue are many who, in future years, as private individuals or members of corporations, societies or civic councils, will have the power to influence the aspect of New York. Who can doubt that the lesson it has taught them with regard to the pleasure-giving power of works of art will then be remembered, and to our city's profit?

But there appear no such signs of popular admiration if one watches the other new statues we have named; and no signs of their having touched the imagination or the historic curiosity of our people if one studies the newspapers or other indications of the trend of popular thought. Yet Horace Greeley was a man in whom New York took great interest while he lived, and Ericsson's services to our country were not merely solid and serious, but picturesque enough in their manifestations to appeal to the imagination and the patriotism of our native and adopted citizens. Had the latter, at all events, been as artistically and forcibly presented to the public gaze as is the case with Nathan Hale, then we could rightly have looked for some patent manifestation of public interest in his personality and deeds. But his statue is a poor work of art, and therefore it does not attract the popular eye or touch the popular heart. It is as inefficient in historically educating the people and in really glorifying, spreading and preserving Ericsson's memory, as it is in delighting the eye and increasing appreciation for art in general. From every point of view the money paid for it has been wasted. Indeed, it has been worse than wasted, for if a statue or any other memorial does not advance the cause of true art, it must retard it.

The lesson which, above all, we wish to enforce is that no public monument has an excuse for existence unless it is primarily and essentially a work of art. The subject may be worthy, the purpose of its erection may be commendable, but it will miserably fail to come up to the measure of its highest usefulness unless it makes a commanding appeal to the imagination of the beholder, and through this to his nobler passions. A thousand monuments have been erected all over the country to celebrate the heroism of our soldiers during the civil war. How many of them set forth with any living force the elevated patriotism which they aim to illustrate and typify? They fail because they are not instinct with the poetry which idealizes every genuine work of art. They move no one; they inspire no one. Instead of adequately commemorating the patriotic ardor of a past generation, they simply testify that the generation which erected them lacked all proper appreciation of art and its highest functions.

Wild Roses about Chicago.

THE species of Rose in the Lake region are not in all respects clearly defined. They intermingle to some extent, and cases occur which may be designated by one name about as well as by another. This may show that too many species have been made, or that some should have varietal rank, yet the troublesome forms may be confined to particular or limited localities, or, if existing elsewhere, may be between a different set of species. The various kinds should be closely studied in the field and garden, where their behavior can be watched. This will be helpful in establishing characteristics and removing discrepancies which may have come from too implicit reliance on herbarium specimens. In the following notes the nomenclature followed is that of the sixth edition of *Gray's Manual*.

The Roses differ from one another in their time of flow-

ering and the duration of their floral season. All species occurring in the northern parts of Illinois and Indiana will be found in bloom in June, with the possible exception of the Prairie or Climbing Rose, whose season is the month of July, as far as I have seen it. The first to appear are *Rosa blanda* and *R. Engelmanni*. In an early season a few flowers of these may be seen in May, but they are not abundant till June, and are mostly gone before the middle of July, only occasional flowers being found afterward. This year they started earlier than usual, and were so hastened by the warm weather that few were found as late as the 1st of July. *R. humilis* comes into flower two or three weeks later, and is generally abundant the first half of July. Each of the three species just named has a season lasting about six weeks. *R. setigera*, the Climbing Rose, barely continues four weeks. *R. Carolina*, the Swamp Rose, flowers through the summer, from the last of June till September, but is most common in July. Another form of Rose with somewhat doubtful affinities which I find here has about the same period as the Swamp Rose. It seems nearest to *R. Arkansana*, Porter.

The most common species is *Rosa blanda* found throughout this region in dry or dryish ground, both in fields and open woods. It is rarely more than three feet high, mostly but one or two feet. Taller bushes are mainly due to richer or damper soil, shade or crowding by other shrubs. The leaflets are from oval to oblong, and of a light green color. They are paler beneath, and generally more or less pubescent. The veins are impressed, and appear rather prominent beneath. The flowers are an inch and a half to two inches in diameter. They are rather pale, but are brighter when they first expand; sometimes they fade almost to white. As a rule the stems are smooth, but there are frequent exceptions, for the branches only may be smooth and the main stems prickly, or both stem and branches may be furnished with acicular prickles. The fresh shoots which spring up from the root are very apt to be prickly at first, but the prickles disappear afterward, lasting till the following year, or even longer. The receptacle is smooth and globular, the calyx-leaves hispid or glandular, commonly undivided, and persistent on the pale red fruit.

Nearly allied to this is *Rosa Engelmanni*. The flowers are somewhat larger, from two to two and a half inches across. They are bright rose-colored when they open, but change to a pale tint, though not as quickly or to the same extent as those of *R. blanda*. It is a free bloomer, and frequently assumes a more simple habit than any other Rose with which it is associated here. Plants of this habit bear the flowers on short branches along the sides of the main stem, forming racemose clusters a foot or two long. These wand-like stems, with ten to twenty flowers all open at once, are very showy. It is principally a species of damp or shaded ground, growing in thickets not too dense and by the borders of swamps, but sometimes appears in drier as well as in more open situations, where it is lower and more bushy, more nearly resembling *R. blanda*. Its more common habitat here is in those parts of the open woods which are wet, or even covered with water in the wet seasons of the year, but where the water does not remain long enough to prevent a growth of shrubs or low trees, or where the ground is not as swampy and hummocky as that in which *R. Carolina* usually occurs. It is taller than *R. blanda*, the usual height from three to five feet, the range from two to eight feet. The main stem is almost always thickly covered with prickles. They are rather short and weak, and are sometimes so dense that the stems have a hirsute appearance, like those of some of the wild Gooseberries. The branches are generally smooth. When in full foliage the whole plant has a very vigorous look, with an ensemble which is far more easily discerned by the eye than described in words, and which soon leads in practice to its detection. The leaflets are large, being broadly oval to slightly obovate, in structure and color much like those of *R. blanda*, but mostly broader in proportion to their length.

The receptacle and fruit are among the best distinctions, and in critical cases may be about the only one. They are oblong to obovate. The fruit of those growing in the vicinity of Chicago is prevalently oblong. Those I have seen from Vermillion Lake, Minnesota, had nearly always obovate fruit; though most specimens are readily distinguished from *R. blanda*, intermediate forms occur which are very puzzling and seem to connect the two. In this vicinity I have only met with it in the sand region at the head of Lake Michigan. It is one of the handsomest of the wild Roses, and well deserves a place in the garden.

Rosa humilis is a shrub with smooth, sleek-looking leaves, which become rather shining when they are thickish. The leaflets are usually oval, with an acute or acutish base and apex. The margin is furnished with teeth, which are apt to be coarser and more dentate in form than those of *R. blanda*, with which it is most likely to be confounded in some of its forms. But the foliage is generally shaded a darker green. The stems as well as branches are more or less rough, with acicular prickles. The so-called infra-stipular spines are in nearly all cases which I have noticed a pair of prickles longer and more strongly developed than others on the stems, though they themselves may be rather weak. The sepals are more or less divided or with narrow appendages along the sides. Individual flowers may not have these appendages, but they are the rule, just as their absence is the rule in *R. blanda*, in which they occasionally occur. The sepals are glandular hispid, but the receptacle is quite as apt to be smooth as glandular. The calyx is reflexed after flowering, and the parts soon fall away from the fruit. The stipules are rather long and are narrower than those of *R. blanda*. The leaf-structure is quite well defined, being finely reticulate, the thinner leaves readily transmitting light and displaying the fine network. This structure of the leaves, together with the less prominence of the principal veins, is often a good way to distinguish *R. humilis* from smoother-leaved forms of *R. blanda*. *R. humilis* is a low bush, six inches to two feet high, or occasionally three or more feet. It is very common in dry ground, especially of the sand-ridges of our Pine-barren region. The flowers are of about the same size as those of *R. blanda*, but generally of a deeper shade of rose.

Rosa Carolina is one of the best-defined species, and is nearly always easily distinguished. Sometimes it resembles taller forms of *R. humilis*, but the pair of rather stout and commonly hooked prickles on the stems below the insertion of the leaves, and their general absence from other parts of the stem, together with its different habit and place of growth, readily indicate the species. The leaflets are oblong to oblong-lanceolate, and are mostly longer and narrower than those of any Rose I find in this region. It is the tallest of our upright Roses, being sometimes ten feet high. As the bushes grow in clumps and are very floriferous, it is an exceedingly showy Rose when in full bloom. No other Rose forms such dense masses, frequently covering quite extensive areas of open and hummocky swamp-lands. The bushes again become very attractive in autumn and early winter with their numerous bright red or scarlet hips.

Rosa setigera, the Prairie or Climbing Rose, is the best marked of any of our wild Roses. The stems do not in any proper sense climb, but rather clamber over bushes, rocks or whatever support may be at hand. Resting on such supports the long stems may run on till they reach the lower branches of neighboring trees and crowd in among them. More frequently they are without support, except as they arch over and rest upon the ground, along which they may trail for a considerable distance. This is the common habit in open places, where the stems, arching every way from the central root, form heaps or mounds of foliage several feet across. The shoots of the year make a rapid and extensive growth, ten feet or more being not uncommon in a single season. It is our most briery Rose, the stems being very rough with strong hooked prickles. The leaflets are also larger than those of other

species, and are of a lively green color. The flowers are large and bright, but with little fragrance. The Climbing Rose is rare in the region about Chicago, being mostly found in the Desplaines valley growing along the banks of the river and its affluents, or in the more open spaces of bordering woods. It is most at home in a fertile soil and in spots where it receives a fair supply of sunlight.

Another Rose of the sand region at the head of Lake Michigan has a strong resemblance to *Rosa Arkansana*, though not in all respects agreeing with typical forms as described or such as I have examined in herbaria. It forms a low bush ten to twenty inches high. The stems are very thickly covered with straight or curved prickles, which are rather strong. The leaflets are five to nine, oval to oblong-obovate, thickish, usually smooth and somewhat shining. The midribs beneath are sometimes provided with small prickles and glandular hairs. The narrow stipules are glandular-toothed or ciliate. It has a persistent calyx, which is glandular hispid, as also the receptacle, usually. The fruit is globular, reddish or yellowish. Though *R. Arkansana* is more common west of the Mississippi, it comes into the Lake region about Lake Superior, and is also found in the northern part of the southern peninsula of Michigan, and seems to re-appear at the southern extremity of Lake Michigan. It has only been detected in this vicinity in quite dry sand, attention being first called to it by its prickly stems and habit of persistent flowering till September.

Chicago, Ill.

E. J. Hill.

Infertile Trees and Shrubs.

IT does not seem to be generally recognized that individual trees and shrubs vary greatly in fertility. Among some White Oaks in the woods we occasionally find trees that scarcely ever bear an acorn, while in the same season we find other trees loaded to profusion; and what is true of the Oak is true of other trees and shrubs. We have been frequently annoyed after planting out specimens on our grounds, in order especially to have home-grown seeds, to find the trees or bushes eventually prove infertile. Occasionally a plant is introduced into cultivation which happens to be an infertile individual, and others propagated from this naturally carry infertility with them. This has been found true with the plant known as the Sweet Shrub, *Calycanthus floridus*. Old plants in cultivation rarely produce seeds; in fact, I do not know that I ever saw perfect seed of this from these plants. Another species is often grown for the *Calycanthus floridus*, which does occasionally produce seeds.*

The Rose acacia, *Robinia hispida*, in cultivation, has never been known to produce perfect seed-vessels—the plants in cultivation having evidently been raised from one early introduced individual. Mr. H. P. Kelsey, of Kavana, North Carolina, tells me that there are frequently plants found wild in that vicinity that are very fertile. Occasionally this infertility has been taken as a mark of hybridity. Dr. Engelmann once found an Oak with partially entire leaves, and yet with some of the characters of the Pin Oak, which, in his monograph on American Oaks, he styles *Quercus palustri-imbricaria*, considering it a hybrid between two species, because of the combination of the characters of these two. He was the more led to believe in the hybridity because the tree never produced any seed; but on one occasion he found a solitary acorn. This acorn he gave to me, and the tree I raised from it has now been in bearing for several years, producing an enormous crop of acorns, in no way differing from those of the common Pin Oak.

It is well to recognize this difference in fertility in individuals where the fruiting character is particularly desired. Some additional care is required to exclude sterile trees.

Germantown, Pa.

Thomas Meehan.

* Plants common in gardens of recent years, and fruit-bearing, are to be referred to *Calycanthus laevigatus*.

Foreign Correspondence.

London Letter.

SOBRALIA VEITCHII.—This is the latest noteworthy success in Orchid hybridization achieved by Messrs. J. Veitch & Sons, who exhibited a plant of it in flower for the first time last Tuesday, when it was awarded a first-class certificate. Its parents are *S. xantholeuca* and *S. macrantha*, the latter being the mother. The habit and flowers of the hybrid are similar to those of *S. macrantha*, except in color, the sepals and petals being white, with the faintest flush of pink, and the lip is yellow, with a conspicuous blotch of rose-purple on the front lobe. This is the first hybrid *Sobralia* raised artificially. The seeds were sown in 1887, so that the plants have been seven years in growing to flowering size.

LÆLIO-CATTLEYA ZEPHYRA.—The parents of this new Veitchian hybrid are *Lælia xanthina* and *Cattleya Mendeli*, and when shown this week for the first time it easily obtained a first-class certificate. It is not unlike *C. Rex* in general characters, especially in the size, form and colors of the flowers, which are medium-sized, the sepals and petals yellowish, the lip pale yellow, darker in the throat, with a blotch of crimson on the front lobe surrounded by a narrow marginal band of white.

CATTLEYA HARDYANA.—This Orchid continues to reveal additional charm in the richness and variety of its magnificent flowers. Two very handsome named varieties were exhibited this week, and obtained certificates—*Lavertinense* and *Tring Park*—both from the collection of Lord Rothschild at Tring. The latter variety bore five enormous flowers on one scape, and was gorgeous beyond description.

DISA KEWENSE.—This is a beautiful hybrid, which is as easily grown as any Orchid I know, and multiplies itself by means of offsets with all the prodigality of Couch-grass. Over a hundred spikes of its bright rose-pink flowers have been on view in the cool Orchid-house at Kew for a month or more, and they are still in perfection. Many connoisseurs declare it is the best of all *Disas*, species or hybrid; and bearing in mind how beautiful *D. grandiflora* is and the grand hybrid *D. Veitchii*, this is saying a great deal. But *D. grandiflora* is not easy to grow, and therefore it lacks the quality which is so marked a feature in *D. Kewense*—namely, good nature under ordinary frame or cool-greenhouse treatment. *D. Veitchii* is a noble plant, and almost as free as *D. Kewense*. I would recommend all growers of Orchids to procure both and propagate them as rapidly as possible. Every little offset, if potted in sandy peat and sphagnum and placed in a cool moist house close to the roof glass, where they will be shaded from bright sunshine and always get plenty of water and air, will grow into a flowering plant in about twelve months. The Kew plants are in four-inch pots, and each bears a spike eighteen inches high with from ten to twenty flowers, each two inches across and of a rich rose-pink color, the shell-like dorsal sepal much paler and spotted all over with deep rose-red. Some of the seedlings have pale pink flowers, and the dorsal sepal is nearly white. Two other hybrid *Disas* in flower at Kew are *D. Langleyensis*, raised both by Messrs. Veitch and at Kew from *D. tripetaloides* and *D. racemosa*, with tall slender spikes of rose-purple flowers intermediate in size between its two parents; the other is *D. Premier*, a triple hybrid, its parents being *D. Veitchii*=(*D. grandiflora* × *D. racemosa*) and *D. tripetaloides*. It therefore combines the characters of three species. In color its flowers are almost crimson, and it is good in size and form. Another year will probably prove it to be a first-rate plant.

STANHOPEA HASELOWIANA.—The genus *Stanhopea* is not a prime favorite with cultivators, although many of the species possess extraordinary beauty as well as peculiar structure of flower; probably their ephemeral character is against their popularity. They are, as a rule, easily kept

in health, and they rarely fail to flower annually. Among the numerous species flowered this year at Kew, *S. Hase-lowiana* is one of the most attractive. It was described by Reichenbach forty years ago, but does not appear to have ever been a garden Orchid until a year or two ago, when it was introduced in quantity by Messrs. Linden. Its flowers are as large as the largest of *Stanhopeas*, and their color is creamy white, with numerous irregular ring-like blotches of lilac-purple on every part. A figure of it will be published in the *Botanical Magazine*. Those who care for *Stanhopeas* should not fail to secure this one.

HABENARIA CARNEA.—A picture of this plant was published in *GARDEN AND FOREST* in 1891, soon after its introduction from Penang to Kew. It was imported in quantity last year and is now in all good collections. A variety called *nivosa*, with pure white flowers, was shown this week by Messrs. Lewis & Co., and obtained a certificate. It is not as pretty as the type, the soft rose-color of whose flowers is exceptionally pleasing.

TRICHOCLADUS GRANDIFLORUS.—This genus consists of two or three species of African trees or shrubs, and is closely related to the Witch-hazels (*Hamamelis*). *T. grandiflorus* has been introduced into cultivation by means of seeds sent to Kew from the Transvaal by Mr. E. Galpin in 1890, a plant raised from them being now in flower in the temperate house. It is ten feet high, freely branched, with alternate ovate-acuminate leaves three to five inches long, brown when young. The flowers are in short terminal clusters on the young branches; they are composed of a short brown calyx, six strap-shaped, wavy petals an inch long, white, with a crimson base and sessile stamens. According to Mr. Galpin, *T. grandiflorus* forms a small tree fifteen to twenty feet high in the wooded ravines of Moodies, near Barberton, where it flowers freely and is handsome, ripening its fruits in May. It is a likely little tree for subtropical regions. A figure of it will be published in the *Botanical Magazine*.

SELAGINELLA VIRIDANGULA.—A first-class certificate was awarded to a plant of this handsome *Selaginella* exhibited by Messrs. J. Veitch & Sons this week. Although only now certificated, this species has been in cultivation in English collections at least ten years. It is a native of Fiji, where it forms suberect stems three feet long, with fronds a foot long, clothed with small dark green leaves and elegantly tasseled. It belongs to the same set as *S. Wallichii* and *S. canaliculata*, which are characterized by an elongated stem clothed with fronds (branches) to the base. There are fine examples of it in the Kew collection.

HÆMANTHUS CANDIDUS.—This handsome new species is likely to become a favorite greenhouse plant, as it grows as freely as *H. coccineus* and has flowers quite as large and of the purest white. It differs from *H. albiflos* in having larger leaves, clothed with hairs on the under side and on the margin; the rachis also is distinctly hairy and the bracts are small. The head is fully four inches across and is composed of a dense cluster of white flowers with linear segments and erect golden-tipped stamens. It is a native of the Transvaal, whence it was sent to Kew a few years ago, where it is now flowering superbly in a cool greenhouse. Mr. Bull also includes it in his catalogue of new plants for 1894. Along with it in the same house at Kew are several big examples of the bright crimson-flowered *H. magnificus*. There are about half a dozen species of *Hæmanthus* which are well worth the attention of bulb-growers in the southern states; they are the three already named, *H. Katherinæ*, *H. carneus* and *H. cinnabarinus*. These are all capable of outdoor cultivation wherever the scarlet *Pelargonium* is hardy, and they grow and flower as freely as the best-natured of bulbous plants.

LINDENIA NIVALIS.—This white-flowered Rubiaceae shrub from Guatemala has been in cultivation about forty years. It was named in honor of Mr. John Linden, the eminent Belgian horticulturist, by whom it was first discovered and introduced. Several specimens of it are now flowering in the stove at Kew. It has linear-lanceolate fleshy green

leaves from three to six inches long and axillary flowers, which are remarkable in having a narrow pinkish tomentose tube five inches long, surmounted by a limb of five spreading petals, each an inch long, a third of an inch wide and pure white; the club-shaped green stigma stands erect above the mouth of the tube and is surrounded by five black anthers. *L. nivalis* is as worthy of a place among stove-flowering shrubs as are *Tabernæmontanas*, *Gardenias* and *Randias*.

London.

W. Watson.

streams from southern Pennsylvania to Florida, Texas and Arkansas, and the other in central and northern China. The American Fringe-tree is one of the most beautiful of the small American trees, and no other inhabitant of our forests is more frequently cultivated or more esteemed in American and European gardens, where it has been a favorite for more than a century.

As an ornamental plant the American Fringe-tree has much to recommend it; it is possessed of a vigorous constitution, which enables it to flourish in regions of much



Fig. 52.—The American Fringe-tree.

New or Little-known Plants.

The Fringe Trees.

CHIONANTHUS, so named in allusion to its light and graceful flowers, is a genus of small trees or shrubs of a family to which the Ash-tree belongs, from which it chiefly differs in the character of the fruit, which is a fleshy cherry-like drupe. There are only two species—one in the southern United States, where it grows near the banks of

more severe climates than that of its native home; its leaves are large, abundant and excellent in color; it is not disfigured by insects or fungal diseases, and in May and June it is covered with long drooping panicles of delicate flowers with elongated, narrow, nearly thread-like, pure white petals. It is always a charming object when in flower; and the surprising abundance of the flower-clusters is shown in our illustration on this page, which, however, fails to give an idea of the grace

of the panicles or the delicate beauty of the individual flower.

As an ornamental plant, *Chionanthus Virginica* has one serious fault. The leaves unfold so late in the season that the plants are naked and appear dead at that time of the year when other trees and shrubs are clothed in their vernal green and many of them are covered with flowers. The Fringe-tree is, therefore, difficult to group with other shrubs without injuring during the early spring months the appearance of the mass. This defect, however, great as it is, is not without compensation, for the Fringe-tree produces its flowers at a time of the year when nearly all other deciduous-leaved shrubs in our gardens have passed their flowering period.

The Chinese Fringe-tree, *Chionanthus retusa*, which grows in the neighborhood of Peking, and has also been found in several places in southern China and in Formosa, appears a much less desirable ornamental plant than the American species, although it possesses much scientific interest from the points of view of geographical botany and of the kinship of the eastern North American and eastern Asiatic floras.

From the American plant *Chionanthus retusa* is distinguished by its smaller leaves, its smaller and shorter panicles of flowers, with shorter and less conspicuous petals. It was introduced into European gardens several years ago by the Veitches, of London, who obtained it through their collector, Maries; it has been an inhabitant of the Arnold Arboretum since 1886, although it has not flowered there yet. Two years ago a specimen was planted in the park in Rochester, New York, and flowered this year at the end of May, about a week earlier than the American species in the same place opened its flowers.

Our illustration, on page 327 of this issue, is made from a branch of this plant, for which we are indebted to the courtesy of Mr. Calvin C. Laney, superintendent and engineer of the Rochester parks.

Except in its earlier flowering, *Chionanthus retusa* has little to recommend it as compared with the American species.

Plant Notes.

BERTEROA MUTABILIS.—This "Hardy Sweet Alyssum" is a Levantine plant, which is more useful in wild gardens or places where it can have much space to spread, than in small gardens. It would be a good plant for large rocky spaces in public parks where a bright, but quiet, effect is desired. Grown in masses it makes an effective foreground for bold-growing plants whose lower parts require masking. It seeds too freely for small gardens, where otherwise it would not be unattractive. It forms plants about two feet or more across, somewhat less in height, and numerous low-branching stems with many side-shoots which produce terminal small clusters of white Alyssum-like flowers. The leaves are small, lance-shaped, and inconspicuous and slightly hoary. It is perfectly hardy here.

NYMPHÆA GRACILIS.—This seems to be the American representative of the *Stellata* group of Water-lilies. It was noted in one of the early numbers of *GARDEN AND FOREST* (see vol. iii., p. 415) by Mr. Pringle, in one of his inimitable letters describing the *Nymphæas* of Mexico. For its introduction to cultivation we are indebted to Mr. E. D. Sturtevant. It is much valued by growers, as it is day-flowering, and the white form is a fine addition to the tropical *Nymphæas*. The flowers vary in color from light blue to white, have sharp-pointed narrow petals, and are borne on stiff stems well above the water. The leaves are light green, dentated and large. The plant is very vigorous in growth.

GLADIOLUS SULFUREUS.—This *Gladiolus* is now in bloom and has flowers of striking beauty, though not brilliant. The coloring at first is a greenish yellow, changing to a very satisfactory shade of yellow of the Nankeen order. Strong plants have stems two and a half feet high, with

two fairly compact rows of medium-sized flowers, of which there are eighteen to twenty on a spike. Mr. Baker describes this species as having seven to eight flowers on a very lax equilateral spike. The note was probably made from a weak growth and would describe the plant as flowered here last season. With greater vigor the spike is more pleasing and well furnished. Its habitat is said to be Mount Kilimanjaro, at an altitude of 5,000 feet. It has not been tested for hardiness, so far as we are aware. There is another *Gladiolus* sometimes sold and grown as *G. sulfureus*, but this is a light yellow form of *G. tristis*, a Cape species.

TECOMA GRANDIFLORA.—The wide-spreading bell-shaped flowers of this climber are just beginning to open here, and their color, which is a soft salmon-yellow without and a light orange within the tube, ranging to orange-red, with darker stripes on the outspread portion, are altogether more rich and pure than those of our native Trumpet Creeper, *T. radicans*. We gave a figure of this plant in vol. iii., p. 393, grown in a pot, and as it flowers when very small, and more freely, too, when forced by artificial heat, it is a good subject for forcing. Nevertheless, it never looks better than when trained up a low pillar, when it throws out its flowering branches in graceful curves. It is not so hardy as our native Trumpet Creeper, but it will survive our winters in any fairly sheltered position. When this Chinese *Tecoma* and our native *T. radicans* are planted together, the latter will commence to bloom in late June, while *T. grandiflora* begins in early August and continues to flower until it is checked by frost.

CLEMATIS VIRGINIANA.—Just now there is no plant which does so much to give a delicate beauty to shady thickets along our roadsides as the common Virgin's Bower. Its long stems support themselves wherever their petioles can find an object to twist about, but by the time they bloom they usually run over the tops of bushes in the most graceful curves, and their starry flowers in large panicles make these flowering stems objects of singular beauty. The plant is beautiful, too, in late autumn, when the ripe fruits appear in downy tufts, and yet there is something in it which refuses to be civilized. It grows well in cultivation, but somehow it never seems to adapt itself graciously to a well-ordered garden, and it never looks as well as it does in remote parts of large grounds or when running over wayside shrubberies.

CYPRIPEDIUM CHARLESWORTHII.—Mr. Watson writes that this *Cypripedium* is flowering in many collections in England, and so far not a single plant has disappointed its owner, every one being attractive in color and distinct. At the same time some amount of variation in the form of the flowers, particularly in the size of the dorsal sepal, as well as in color, has been revealed. Certainly it is a good garden plant, combining as it does a distinct character of flower with good nature under cultivation. It is now plentiful in English gardens.

Cultural Department.

Notes on Trees and Shrubs.

THE names huckleberry, whortleberry and hurtleberry, with qualifying or descriptive prefixes, are all often used indiscriminately for the fruits of two distinct genera of plants, *Gaylussacia* and *Vaccinium*. Locally, however, the name of Huckleberry is generally given to the former genus, while the fruits of the species of *Vaccinium* are commonly called blueberries, although some of the species bear black fruits, while on the other hand there are *Gaylussacias* which produce blue fruits. At one time they were both included under the genus *Vaccinium* by botanists, but good generic characters were found for separating them.

The genus *Gaylussacia* differs from *Vaccinium* in having leaves usually resinous dotted in the opening of the anthers and most especially in the structure of the fruit. While a Blueberry or *Vaccinium* fruit is only four or five celled (these cells being sometimes partly divided by other in-growing partitions), and contains many small seeds, the fruit of the Huckle-

berry is ten-celled and contains ten seeds, each enclosed within the hard cell walls, which thus form little sharp-edged nutlets, popularly called seeds.

One of the greatest objections generally made to the common Huckleberry, *Gaylussacia resinosa*, is the prevalence of the hard little seeds or nutlets in the fruit. Otherwise, this clear shining black fruit is generally found agreeable and palatable and popular in the market. The quality of the fruit varies considerably in different localities and on different individual plants, offering a great opportunity for improvement

It is of good size and rather soft and juicy, so that its ten seeds are not so much noticed when the fruit is eaten. Though small, the plant is prolific, but does not seem so vigorous and fast-growing as the normal black-fruited type. In the *Bull. Torrey Bot. Club*, vol. xvi., p. 21, it is stated that in one season in Pike County, Pennsylvania, twenty bushels of wild white or cream-colored berries "were gathered and sold for almost three times the price of the ordinary kind."

The Huckleberry responds quickly in regard to size, quality and productiveness when brought under cultivation, and im-



Fig. 53.—*Chionanthus retusa*.—See page 325.

by cultivation and selection. Improvements in the direction of fewer seeds and increase in size are most to be desired and should not be difficult of attainment. On account of difference in size the seedy character of the fruits of some wild plants is much less noticeable than it is in others. Another direction tending to popularize the fruit may be found in selecting and growing the light-colored or so-called white-fruited varieties occasionally found. A specimen growing in the Arboretum has dull reddish white fruit, or purplish red on one side and pale on the other, with thin skin and a sweet, pleasant flavor.

proved plantations of it may yet be found to pay well, although the profits may not be so great as with the Cranberry in its best seasons. The Huckleberry will grow in any ordinary garden-soil in regions where plants of this family thrive naturally, but a sandy soil with a good addition of peat will suit it best.

While this species grows naturally in both dry and moist situations, we have another closely allied species which is more restricted to damp grounds, although it will do well under drier conditions of cultivation. This is *Gaylussacia*

dumosa, sometimes called the Dwarf Huckleberry, though it is no more dwarf than *G. resinosa*. At this season the chief difference will be noticed in the much duller black color of the fruits of *G. dumosa*, which are also covered with minute rusty brown glandular hairs. The berries are also produced on very leafy peduncles and are accompanied by green leaf-like bracts, and the calyx-lobes are much larger and more conspicuous. It is curious that this fruit should have been described as insipid in some of the Botanies, for to many persons it has a pleasant and agreeable flavor, although its duller color and rusty-hairy character and tougher skin are objectionable.

Of all our northern hardy species of this genus the fruit of the Huckleberry known as the Dangleberry or Blue Tangle, *Gaylussacia frondosa*, is considered the best-flavored and most palatable by many good judges. It is sweet and pleasant, with a slight agreeable acidity, and either fresh or cooked it is hardly surpassed by any other Huckleberry or Blueberry. The berries are of a deep blue color, covered by a rich bluish white bloom. The leaves and young twigs of the whole plant are generally pale or glaucous. The bush may often be found from three to five or six feet in height, but in this region it does not appear to be prolific, and there is some trouble in getting a large quantity of the berries. These are generally produced in a somewhat scattered manner on long slender stalks, from which habit the plant gets the name Dangleberry.

Arnold Arboretum.

J. G. Jack.

The Vegetable-garden.

MANY crops in the vegetable-garden were injured by the dry weather of June and July. The total rainfall in this locality was only 2.05 inches, and as the rain came in heavy thunder-showers and fell on a parched surface much of it ran off into the drains instead of soaking into the ground. Peas suffered more, perhaps, than any other crop, and were literally burnt up. The later sowings now look more promising, having been helped by recent rains, but it is too late to make any further sowings on account of mildew. If the weather is not too dry, good peas can be had in September from sowings made about the middle of July. String Beans may still be planted for a late crop, and these will do well unless caught by an early frost. We find Valentine the best variety for late planting.

Early celery is now ready for use. Where the plants are set in single rows we prefer blanching with boards to earthing up. The notion that Celery thus treated is deficient in flavor to that banked with soil, is erroneous. When the plants are earthed up in hot weather, such as we have had recently, any considerable rainfall causes the hearts of the stalks to rot. By using boards this injury is obviated and the plants can be regularly supplied with water, which cannot be done when they are earthed up. Celery thus treated is crisp and sweet, whereas when earthed up and it becomes dry at the root, the growth is stopped and it is tough, stringy and bitter. In prolonged dry weather Celery requires copious waterings. A cool showery day should be selected on which to apply liquid-manure, if this is possible, and in any event the earth about the plants should be well-soaked with clean water before the liquid-manure is given. For a late crop of Celery the plants must be set out now without delay, or poor heads only will be produced. Celery is a moisture-loving plant, and should never be allowed to suffer for water. If kept growing continuously it is not likely to be troubled seriously by rust and other diseases.

Shallots are about ready to be taken out of the ground, and Onions are almost in condition to be pulled up. Onions are generally small this season, but several soakings of water during the season, applied with a sprinkler, have helped our crop, so that it is above the average of other years. After the Onions are cleared off we fertilize the ground with some chemical manure, point it over and sow Prickly Spinach.

Rutabagas and Beets may yet be sown for a late crop. We find Early Egyptian to be the most reliable Beet. A batch of Cauliflower should now be planted in well-enriched soil, and fine heads will be produced if they have the right treatment. Cabbage, Savoy Cabbage and Curled Borecole may also be planted at this time, and occasional sowings of Lettuce and Raddish seed in the open should not be neglected. This has been a trying summer for Lettuce, but better heads may now be expected.

Cucumbers growing out-of-doors should be looked over every few days and the old fruit cut off. The English variety should now be set out in frames for late crops, and a further

sowing made, the plants from which can be grown on at the end of a warm house. Muskmelons should be examined occasionally and all fruit of a fair size raised to the light on a small block of wood or a flower-pot, to prevent rotting during wet weather.

Potatoes have ripened much earlier than usual on account of the dry weather. Advantage should now be taken of clear, bright days to harvest them, for heavy rainfalls would do them serious injury. Sweet-potatoes have reveled in our recent tropical weather. The vines require to be lifted from the ground each week as they root at every joint if left undisturbed. Tomatoes on trellises need trimming once a week, and plants in hills should have some of the superfluous shoots removed so the sunlight may reach the fruit. The ripe fruit should be gathered so that the later fruit may fill out and ripen.

The hoe should be used freely for all growing crops and the surface be kept well stirred. Peas, Corn and other vegetable plants should be removed to the rubbish heap as soon as they are spent. If this is done and the weeds are kept well under, the vegetable-garden will be attractive during the fall season, when it often is most disorderly.

Taunton, Mass.

W. N. Craig.

Carentan Carrot.—I have this season made extensive trials of almost every kind of Carrot, to learn which is the best. They have been grown in a soil best suited to Carrots—that is, a free sandy loam—and the weather conditions have been favorable for perfect development. Growing modestly beside Danvers, which was rearing its rank tops, I noticed a variety with very small and delicate foliage. This is a notable feature in a Carrot, especially when needed for forcing or use in a small garden. The roots I found to be seven inches long, perfectly round, free from “rings” and rootlets, with a small stump-root. It was perfectly free from the woody core so prominent in many varieties, and remarkably tender and sweet. When I add that this variety is just as early as the French Forcing Carrot, its value will be apparent. It is amazing that vegetables comparatively rank and coarse are grown when such refined delicacies may be had with no greater outlay of labor and money. For cultivation in a private garden this Carentan Carrot I believe to be the best variety for summer use.

Bloomfield, N. J.

W. R. S.

Correspondence.

Notes from West Virginia.

To the Editor of GARDEN AND FOREST:

Sir,—Though few shrubs are now in bloom, their dense foliage forms an attractive background for the showy flowers of many herbaceous perennials on the margins of beds. Tall Campanulas and gay-colored Phloxes grow among the lesser shrubs. The fragrant Clethrass are just fading. Here and there are large clumps of the native *Enotheras*, *E. biennis*, self-sown, and several handsome varieties of *Asclepias*, notably *A. tuberosa*, and a bright pink-flowered Milkweed, which are allowed to bloom at will in the wilder parts of the home-grounds. Near the house are fine groups of Day Lilies or Funkias, the white-flowered, the blue Day Lily and the variegated varieties—all now at their best.

Several species of small-flowered Clematis, now in bloom, are scrambling over dead trees and the old stone-wall that surrounds the grove, and the scarlet Trumpet Creeper, *Tecoma radicans*, riots over the palings and clothes the rock-brakes with a fresh mantle of green, holding up its deep red goblets as an invitation to the humming-birds.

An interesting group of blooming shrubs has for its centre a tall *Aralia spinosa*, just coming into flower. The feathery blossoms, in large umbelliferous panicles, give the plant an airy elegance which makes it a worthy companion to Osbeck's Sumach, *Rhus semialata*, which is the most graceful of its class. Its delicate cream-colored florets opened a few days before those of the *Aralia*, and are still in their prime.

Near by is a handsome large Chaste-tree, *Vitex Agnus-castus*, covered with its paniculate cymes of bright bluish purple blossoms. The leaves of this shrub are aromatic, resembling those of the Walnut, but with a more powerful fragrance. The sap of the Chaste-tree is quite poisonous, as I once found to my cost. Having a tendency to browse and nibble among my plants, I experimented with odorous twigs of the *Vitex*. A sore mouth was, however, the worst consequence of the task in which I indulged.

Very charming at this season are the large bright red hips of the Rugosa Roses, and I can even recommend them to the palate of the curious. They are as large as crab-apples and

pleasantly sweet, though rather insipid to the taste. These Roses still give us a few blossoms.

Rosa Wichuriana, planted last spring, bloomed profusely in June. This Rose grows and spreads rapidly without any care, and is a charming plant for wild places and rockeries, with a creeping habit, tiny varnished leaves and pretty single white flowers.

Another interesting June bloomer is *Hovenia dulcis*, a small tree from Asia, the fruit of which "is said to make men mad." Our *Hovenia* bloomed, but it did not set any fruit, so that we have no means of proving its intoxicating qualities. It is four years since it was planted. I would be glad to know whether any readers of GARDEN AND FOREST have succeeded in obtaining fruit from the *Hovenia*. The flowers have a perfume like that of Elder-blossoms. They are cream-colored, and borne in axillary and terminal panicles. The *Hovenia* thrives in a clay soil and seems to have no insect enemies.

Many *Altheas* are in bloom. These shrubs have cool-looking foliage, and the flowers of some of the single-flowered kinds are pretty enough. The bright pink, the white and the blush-colored single-flowered *Altheas* form a pretty group in one of our shrubberies, but their chief merit lies in the fact that they are August bloomers.

Shepherdstown, W. Va.

Danske Dandridge.

A Desirable Tree.

To the Editor of GARDEN AND FOREST:

Sir,—I should like to call attention to the Kentucky Coffee-tree, *Gymnocladus Canadensis*, a tree which has not received the attention it deserves in the northern states. It is one of the hardiest, cleanest and most distinctive of our trees, and is never assailed by any enemy, so far as I know. Its growth is extremely rapid, and it sometimes makes six feet in a season from the seed, and more than that as a sucker-growth. The transplanted sucker, however, is less rapid in development than a seedling. The limbs have an attractive way of elbowing about that distinguishes it from all other trees. For shade, the tree has the charm of sifting and thinning the sunbeams rather than totally excluding them. The flowers, which come on about the first of July or earlier, have a spicy fragrance.

A valuable characteristic of this tree is that it leaves out late in spring. Difference in time of coming into leaf adds variety to plantations, and the Butternut, the White Ash, *Magnolia acuminata*, the Catalpas and the Coffee-tree are two weeks later than the Willows and Birches. The English Elm is fully two weeks later than our native Elms in putting forth its leaves.

Clinton, N. Y.

E. P. Powell.

The Forest.

Mixed Oak and Beech Forests of the Spessart: Management by the Bavarian Government.—IV.

CONIFERS MIXED WITH THE BEECH.

IT is not, however, intended that those portions which will be left to be stocked by the Beech are to grow up as pure Beech-woods. The worst places where the woods are stunted, on shallow stony ground, or when the rock is near the surface, or when the soil has deteriorated through continuous removal of litter, have been and will hereafter, as the wood on them is cut, be transformed into Scotch Pine on dry, and Spruce on moist ground. But also into the Beech-woods on better soil, where it does not appear expedient to establish Oak areas, is it intended to introduce a mixture of coniferous woods. The object is to produce more timber within a shorter time. The timber of these coniferous trees, Larch, Scotch Pine, Spruce and the Silver Fir, invariably fetches good prices where it has grown up mixed with the Beech. In fact, it is intended to create mixed woods, not only of Beech and Oak, but also of Beech and these conifers. It has been stated above that a Beech-tree 180 years old, with a diameter of twenty-four inches, may be expected to yield 30 per cent. of timber at twenty marks and 70 per cent. of fire-wood at five marks a cubic metre. That time will suffice to produce two successive crops of coniferous trees with, in the aggregate, a much larger volume of wood, of which about 80 per cent. would be timber, worth as much if not more than Beech. Moreover, the demand for Beech-timber, which is never very

considerable, may diminish, whereas the demand for coniferous woods is certain to increase.

As regards the Larch, many of the younger woods do not look promising, but, as already mentioned, there are groups of trees over 100 years old which have grown up in the midst of Beech, and which are well grown and healthy. The Silver Fir has not yet been tried to any large extent in the Spessart; there is not, however, any doubt regarding its success. In accordance with these ideas, coniferous trees are introduced into the Beech-woods in a variety of ways, blanks in the young crop are filled up by planting groups of Larch in dry, Spruce in moist places, while the Silver Fir, which demands much shelter while young and must have a start on account of the very slow rate of growth in its youth, requires different treatment. In compartments which are to be regenerated within a few years, holes are cut by the removal of old spreading trees; in these holes the ground is sown with Silver Fir which comes up under the shelter of the surrounding wood and can bide its time, until the rest of the wood is regenerated in the usual manner by means of successive cuttings.

FUTURE TREATMENT OF OAK AREAS.

At the present stage these Oak areas are exceedingly healthy, completely stocked thickets. But it is certain that when they have attained the age of from forty to fifty years their condition will be less satisfactory, the stems will show a tendency to branch, they will assume an irregular shape, and the ground will not be sufficiently shaded or sufficiently manured by the scanty leaf-fall of the Oak. At that time, therefore, Beech will have to be sown or planted to serve as an under wood to shade and manure the ground, and thus to improve the growth of the Oak. For this purpose the Oak will have to be heavily thinned, and these thinnings will have to be repeated from time to time in order to afford the light needful for the development of the Beech. Eventually it is expected that these areas will be stocked with two-storied woods, the upper story consisting of Oak and the lower of Beech, when at the age of 120 the Beech-wood is cut, a portion of the Oak-trees will be held over and these will probably run through a second rotation of the Beech. All this, of course, is hypothetical, but the hypothesis is based upon actual experience, and when plans are framed for the management of such slow-growing trees as the Oak, some idea must be formed regarding the effect which the operations prescribed in these plans will have in a far-distant future. So much, however, may be regarded as certain, that it is not expedient to allow the woods in these Oak areas to grow up as pure Oak-woods.

The question arises, whether matters might not be arranged a little differently, so as to save the underplanting with Beech and the heavy thinning of the Oak entailed by this operation. In that portion of the forest-range Lohr West, which adjoins compartment Horstig, and in compartment Schwarzbuch of the Rothenbuch range, which is situated west of Horstig, considerable areas were sown in 1861 with acorns, not broadcast, nor in lines two to three feet apart, as previously described, but in lines from six to nine feet apart. These lines had evidently been well dug up and the acorns had been sown very thick in them. The lines of Oak-saplings are dense and in excellent condition, and between these lines Beech has come up at a later date naturally, but the Oak having a sufficient start the Beech hitherto has been no hindrance, but on the contrary an advantage in shading and manuring the ground, and in making the Oak form clean and straight stems. It remains to be seen whether a distance of six to nine feet between the lines is sufficient, and whether the Beech will not after all overtop the Oak under this arrangement. Should a plan like that here indicated prove successful, the Oak areas would have to be made larger than hitherto, but the great advantage of a mixture from the commencement would be gained, and the operation of underplanting with Beech at a later period would be saved.

Bonn, Germany.

Dietrich Brandis.

Notes.

A correspondent inquires how much land it would require to furnish strawberries enough to supply an average-sized family. We should say that such a family might have in an average year all the fresh berries needed during their season, besides a few for canning, if five or six rows of plants a hundred feet long were set out and cultivated with rather more than average care.

A wine syndicate has been incorporated in California for the purpose of maintaining the prices of grapes and putting an end to the ruinous competition which has forced the price of wine below the cost of production. The new association, which is composed of the largest wine makers in California, has secured options on four-fifths of the entire vineyard area of the state. No wine will be sent out unless it comes up to a certain standard.

The celebrated pond in Bordentown, New Jersey, where the so-called Egyptian Lotus was first naturalized, is now in its greatest beauty, and the growth is unusually fine this year. Mr. E. D. Sturtevant writes that during the last week in July a thousand flowers could be seen expanded at one time. In some instances the flower-stems rise to a height of more than eight feet, and a tall man wading in the shallow water through this miniature tropical jungle is entirely hidden from view.

In most of the eastern states this has been a trying year for new plantations on account of the protracted drought and heat, and yet, out of several thousand trees and shrubs transplanted in the Arnold Arboretum, very few have succumbed. Indeed, the plantations have rarely looked better, and Mr. Dawson attributes this success to a very careful preparation of the ground. Cultivation, to keep the surface soil loosened, has helped, but the principal factor was deep and thorough trenching beforehand. Only when ground is prepared in this way are newly planted trees and shrubs enabled to resist successfully long periods of drought.

A dispatch to the *Tribune* of this city states that a train-load of fresh California fruit will be sent to London every week until the end of the season, and that the first shipment of this year is now on the way. An experiment of this kind was made two years ago, but freight rates were so high that the venture was a losing one. But with rates reduced to present figures a fair profit ought to be realized. It is estimated by competent authorities that California has lost \$1,500,000 by the railroad strike. This means not only that much fruit was lost, but that prices have been greatly depressed by the present glut in eastern markets. Since the strike as many as 108 car-loads of fruit have been shipped eastward from Sacramento in one day. The San Francisco fruit market is flooded with choice Bartlett pears and Crawford peaches, and street peddlers are selling sixteen large pears or peaches for five cents, a price which does not pay for picking and packing.

A writer in the *American Agriculturist* states that from six to eight thousand acres of land in Wayne County, New York, are devoted to the cultivation of Peppermint. The average yield is about a ton of wilted plants to the acre, and this will produce some twenty pounds of oil. The yield runs down from this to ten pounds, and even less, and has been known to go as high as forty-five pounds of oil to the acre, the price of which has varied within a few years from \$1.35 to \$5.25 a pound. The prices received by different growers depend largely on the freedom of the Mint from weeds, which are the great enemy to success. The habit of the Peppermint is such that its profitable cultivation is impossible upon foul land. Low, rich, mucky land is selected, and in April portions of the old plants are strewn in furrows thirty inches apart. The ground is kept clean until the plants, by tillering, take entire possession of it. After this hand-weeding must be resorted to. The land is cropped two, and sometimes three, years, but it then becomes so weedy that the oil will not be good enough to pay for harvesting. Of course, the first crop is best. The Mint ripens when about two and a half feet high, is cut with cradles in the latter part of August, raked into cocks, wilted, and then taken to the still which extracts the oil.

Students of palæontology will be interested in an article by Mr. Lester F. Ward, published in the July *Bulletin of the Torrey Botanical Club*, and entitled "Recent discoveries of Cycadean Trunks in the Potomac Formation of Maryland." In 1859 two large fossilized Cycad-trunks were discovered in the iron-ore region of Maryland, and recently Mr. Arthur Bibbins, Curator of the Museum of the Woman's College in Maryland,

has found thirty-five additional ones, all good, and many of them "extraordinarily fine" specimens, some showing fully half the original trunk of the tree. This the writer regards as "one of the most important events in the history of palæontology in America, as it brings together such a body of facts relative to the Lower Cretaceous in Maryland that it will now be possible to give something like a complete history of that type of plants." The numerous and valuable specimens were not unearthed by Mr. Bibbins, but were found in the possession of rural residents of the iron-ore districts, having been discovered long ago. Their curious aspect then attracted attention, and they were preserved as curiosities, perhaps in the hope that they might prove of pecuniary value; and, therefore, in addition to the specimens that Mr. Bibbins actually obtained, there remain quite a number which are known to exist, but which for the present cannot be found.

The Duchess of Oldenburg, Holland and Twenty-ounce Pippins, and Maiden Blush have been added during the week to the list of apples now on sale here, and these bring as high a price as Nyack Pippins, \$3.00 to \$3.50 a barrel at retail. Maryland, Delaware and New Jersey peaches are still high and in moderate supply, the best selling for \$2.50 a basket, and even more, to the retail buyer. Moore's Early and Champion grapes are now coming from as far northward as Delaware, Virginia contributing most of the supply at this time. Belle Lucrative, Flemish Beauty and Catherine pears have arrived from New Jersey and from the Hudson River district. But the main factor in the fruit-market is the enormous quantity of California fruit now arriving. Whereas sixty car-loads a week is a normal supply for this city, and eighty car-loads the limit of sales at fair prices, as many as one hundred and thirty-five car-loads were sold here last week. Nearly 40,000 boxes of Bartlett pears alone have been sold at prices that little more than pay actual shipping expenses to the grower. The fruit is of fine quality, and this is especially true of the peaches, which this year are of a flavor that compares well with eastern fruit, while the nectarines, which began to arrive last week, although small, are beautifully colored and of unusually high flavor. Canteloupes and Jenny Lind muskmelons from Maryland and Virginia sell at \$2.00 and \$2.25 a barrel at wholesale, while only the best grade of an uncommonly large supply of the yellow-fleshed Christina melon brings as much as \$1.50 a barrel. Probably there have never been as many watermelons in this market before. Last week, after thirty-one car-loads had been unloaded on one of the railroad docks in this city and added to a large quantity already on hand, forty-eight car-loads remained standing in Jersey City awaiting room on this side. Those quoted as "prime" sell at \$12 to \$15 a hundred.

Under the act of Parliament which gave Covent Garden Market its charter in 1828, it was divided into eight sections, the smallest of which, containing twelve small stands, was devoted to trade in flowers and plants. In 1848 the old place had become inadequate and a separate flower-market was built. With increased facilities for trade the demand grew, and as plants and flowers were better grown and better known they were more appreciated, and the present large market was founded, and already this is filled to overflowing, so that bedding-plants for gardens and window-boxes are accommodated outside. No flower-show in the world can equal this market in the morning, either in the abundance of its material or its average excellence. The plants are of a size suitable for the purpose for which they are to be used, and they are perfect examples of good cultivation. More perfect specimens of Pelargoniums, or well-flowered Fuchsias, or finer pots of Mignonette, some of them carrying six or eight giant trusses, or Ericas of different varieties cannot be seen anywhere. The cut flowers are quite as good as the growing plants. They come not only from near-by points, but they come by the thousand from France, Italy, Holland, Belgium, Germany, the Channel Islands, Scilly Islands, and every nook and corner of Great Britain. As an indication of the amount of business done here it is stated in a recent article that a single grower often sells in one day eight hundred large baskets of double white daffodils, each basket containing a dozen bunches; while another disposes of \$300 worth of violets in a morning. As an instance of the enterprise which keeps up with all attractive novelties, it is said that one grower already sells daily two hundred dozen flowers of the new variety of Carnation, Uriah Pike. Some estimate of the enormous quantity of flowers sold in this market can be made from the following figures for one morning in May last: 268 large vans were loaded with flowers; there were 114 smaller loads, besides 370 stands with every available shelf packed to overflowing, gangways blocked and the entire floor space filled.

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A Border of Hardy Perennials.

A SUGGESTIVE letter on this subject will be found in our correspondence column this week—a letter which touches upon many interesting subjects, to some of which we shall make reference in future issues. It is true that no part of the flower-garden is quite as attractive as that which is devoted to hardy herbaceous perennials, and these plants are invested with a charm of their own which other plants and other classes of plants do not possess. A garden is never quite as satisfactory at any other time of year as it is in the spring, and all the flowers in a spring garden are those of such sturdy constitution that they can endure the cold of our winters, while a large portion of them live on and flower again the next spring, and, indeed, for a long succession of springs. Perennials which bloom at other seasons, besides their intrinsic beauty, also command a certain respect for their ability to live on and flower with increasing vigor year after year without any annual preparation of the ground and sowing of the seed. Many of them are better for cutting and for other uses than are annuals or the tender species which have to be housed every year, and they can be used in an infinite number of ways for the decoration of gardens small and large.

But every plant, as well as every class of plants, has its limitations, and there are some purposes to which hardy perennials are not adapted. Interesting as they are individually, it is impossible to fill a large border with a selection of these plants alone which shall be constantly in bloom and be disposed in such a way that the flowers shall at all times present a picture of harmonious form and color. If the bed presents a certain scheme of color in early spring, and a succession could be arranged so that as one blue flower fades another flower of the same color would be ready to take up its work, and the same scheme could be carried out with yellow flowers and those of other shades, the same colors and the same arrangement of colors would be maintained the season through, and the picture would become as tiresome and monotonous as a pattern bed of Coleus. Fortunately, this is not possible.

Very plainly, too, as the colors of each portion of the bed vary from week to week, some flowers lasting for a few days and others perhaps as many weeks, the problem of adjusting these shifting colors so that they will constantly arrange themselves into new and equally harmonious combinations becomes too intricate for any practical solution. It is not difficult to construct a single picture for any given season, but when its elements are constantly changing, so that one picture passes fluently into quite a different one, it would baffle any skill to have all these transformations equally beautiful and developing into new and rich harmonies of color during all the flowering period.

But, even if we could figure out the necessary permutations and combinations for such a result, we should still fail of our continuous picture, because it is impossible to keep a perennial border filled with plants in flower. It is very true, for example, that when the tops of some of the bulbous plants die down and become unsightly we may arrange to have their places filled with other flowering plants without much or any detriment to the strength of the bulbs for another year. But this only provides for a second period of bloom, and by no means for the entire season. There are many other perennials, as, for example, our beautiful *Mertensia Virginica*, which flowers in early spring and soon dies completely out of sight, and we may have planted near it the blue *Plumbago*, *Ceratostigma plumbaginoides*, which hardly appears above the ground until the *Lungwort* has disappeared, and which will bloom from midsummer until frost. But, of course, there will be a period between the flowering of these two plants when the space which they occupy will show no flowers. The only possible way of keeping a border filled with flowers is to have reserve supplies of annuals and other plants to take up and put in their places when their flowering season is done. We may sow the seeds of such annuals as Shirley Poppies or *Centaurea* in the autumn among our *Narcissus*-bulbs, and these will flower as the tops perish. But after they are gone the space can only be occupied by plants which have been grown elsewhere for this purpose. But, again, there are a great many perennials which do not entirely die away. Some of them will have unsightly fruit, and the dead stalks which bear them can be cut away, but there will be a mass of foliage which must live through the summer to store up food in the stout roots which are to produce the next spring's flowers. Some of them die completely down in midsummer, like the *Ascension Lily*, but these may soon throw out leaves to build up bulbs again, and remain green all winter. Of course, the late-flowering species must occupy the ground all summer, so that, altogether, while it is a practicable matter to have hardy herbaceous perennial plants flowering in abundance at all seasons, from early spring till frost, it is not possible to make a bed out of them exclusively which, for general effect shall be satisfactory the season through.

But this only means that there is one use to which hardy perennial flowering plants are not quite adapted. They are valuable in so many other directions, however, that there is little danger that any horticultural writer will say too much about them. We agree with our correspondent that in describing them, as well, indeed, as in describing every other plant, their defects, as well as their beauties, should be pointed out, and that an explanation of the peculiar habits and characters, the likes and dislikes of each individual, so far as it is possible, should always be fully set forth. Mere lists of plants, or skeleton descriptions which place each one of a long series of plants in the same plane without any perspective, are really of no use to the novice. It has been our custom rather to give full details of the character and habits of a few plants in each issue of this journal, than to spin out a catalogue which is little more than a list of names. Readers who begin to take an interest in any plant will find it a good exercise to examine the back volumes of *GARDEN AND FOREST*, which is not a difficult thing owing to the careful index which we have made every year. All the perennial plants which are essen-

tial to hardy gardens in eastern America have more than once been pretty fully noticed in one way or another, and yet we shall be very glad to continue this work and make it even more systematic in the future.

Of course, there are many items of knowledge which no text-book can convey. The plant which is picturesque and attractive in one position will be a weed in another, and this can only be learned by personal and familiar acquaintance. Fortunately, it is one of the keenest delights of horticulture to make such acquaintance with plants. No doubt, the manuals and journals can all improve upon their methods of instruction, and we shall always welcome suggestions in this direction; we shall take pleasure also in answering specific questions about specific subjects. But, after all, the keenest satisfaction does not come from reading what some one else has learned, but from actual and practical experience in the garden. After all is told about a plant and its habits a careful and sympathetic grower will find that it develops under his hands characteristics of which he had never dreamed—that is, it will never cease to be an object of interest, a result certain to happen just as soon as he knew it completely. It is the perennial delight of horticulture, and the special delight of the perennial garden, that it constantly offers a field for study and for research; that it has something new to unfold every day; that old plants are constantly developing new beauties, and that new ones are constantly disappointing or surprising. In short, a garden continues to be always attractive because it is never finished. It will be enriched with memories of success and failure every season; but, after all, its fresh and hopeful promise for the future will never fail, but will stimulate an ever-renewed and ever-deepening interest as the years move on.

Some Trees at Rancho Chico.

A GREAT many prominent persons remember with pleasure the hospitality of Rancho Chico, in Butte County, California, but the place is especially dear to botanists. There the Sir Joseph Hooker Oak stands; there the late Dr. C. C. Parry spent many vacations, and the late Asa Gray, John Muir, the mountaineer, and many others have studied and admired that magnificent estate of 26,000 acres of valley and foot-hill.

Much of the ranch is still in forest—the primeval Oak forest of the Sacramento valley. Along Rio Linda and Chico Creek are thousands of the finest Sycamores in California, often draped to their summits with the wild Grapevine. The range of native vegetation is very extensive, and no species has been allowed to be destroyed. There is a wild garden of many acres, unpastured and unmowed these fifty years.

But the grounds about the mansion alone afford sufficient material for more than one article. Here, General Bidwell, the owner of Rancho Chico, began to plant native and exotic trees as early as 1856 in what was then a great unfenced cattle range, on the north side of Chico Creek. Some earlier efforts to move young Conifers from the Sierras had utterly failed, when a Scotch gardener, named Carmichael, offered to transplant specimens of native California trees to the place.

He brought down about a hundred selected specimens of Pines, Firs and other Conifers; of Mountain Oaks, of Ceanothuses, Manzanitas and various shrubs. Every one grew, and some of the Pines thus planted in 1856 are now a hundred feet high, with trunks three and a half feet in diameter. The bulk of the ornamental planting, however, was not done until about 1868, and, except where otherwise noted, the trees hereafter named are twenty-five or twenty-six years old. In the first rank of notable trees is the famous Rancho Chico Fig, which stands on the lawn east of the mansion. It was illustrated several years ago in *The Century Magazine*, but it is larger and more picturesque now. The variety is the old Mission, known as Black California, an immense bearer, not as hardy as some varie-

ties, but in favorable situations one of the strongest growers known. Spreading out from a central crown the tree has sent out vast boughs that have rooted somewhat after the fashion of an Indian Banyan, and so extended themselves. It still keeps the appearance of a single tree, however—a broad, low tree, fifty feet high, with boughs that cover a circle nearly a hundred feet across.

Two specimens of *Quercus Robur* merit attention. They are very shapely, with clear trunks twenty inches in diameter, and are, perhaps, forty-five feet high. A *Quercus Cerris* of about the same age and size is heavily loaded with acorns. *Quercus aquatica* and other American species have evidently found a most congenial home here.

Everywhere one notes with pleasure the free use made of American trees and shrubs. Among many trees *Juglans Californica*, one fine specimen, girths twelve feet, and is about seventy-five feet high. The Catalpas are very large, probably unsurpassed in California. Pecans and Hickories, sixty feet high, are in full bearing. Sequoias (*S. gigantea*), eighty feet high, stand with equally choice specimens of *Pinus ponderosa*, *Pseudotsuga taxifolia*, *Cupressus Lawsoniana*, the giant *Thuja*, the *Libocedrus* and many other notable trees. Still older Sycamores, Oaks (*Quercus lobata*) and one giant Cottonwood (*Populus Fremontii*) stand on the sloping banks of the stream, as they stood while California was an obscure Mexican province. The Cottonwood is one of the great trees, a hundred feet high and sixteen feet in circumference of trunk. It stands at a bend of the stream, where its flowering season causes little or no annoyance, and at all other times it is a grand spectacle of semi-tropic luxuriance.

Here are American Elms that would not disgrace New England, and superb evergreen Magnolias, seventy feet high, and Olives whose trunks are mossed and ridged till they seem century-old trees. But there is no more remarkable tree on the grounds than the one specimen of Flame-tree (*Brachychiton diversiloba*). This, I feel confident, is unique in its way. General Bidwell obtained a small tree of this beautiful species some thirty years ago. It grew rapidly and blossomed, but a very severe winter killed it to the ground eight or nine years ago; a sprout came up, and it is now a straight and lovely shaft of smooth silken green, crowned with the charmingly diversified foliage so characteristic of the species.

Among other species that are not American one observes a fine *Ginkgo biloba*, perhaps thirty-five feet high; a Camphor-tree, about sixty-five feet high; a tall *Cedrus deorara*, a most beautiful specimen of *Thuja gracilis pendula*, fully seventy feet high; a very large *Cryptomeria Japonica*; a *Tamarix*, whose trunk is eighteen inches in diameter, and a *Chamærops excelsa*, whose crown is well up among the older trees of the garden.

The collection contains some particularly fine Lauruses—an *L. Chinensis*, twenty-six feet high and eighteen feet across, the branches extending downward to the ground; also equally good specimens of *L. Cerris* and *L. Japonica*. Then, too, one notes such distinctive American shrubs and small trees as *Ceanothus cuneatus*, *Heteromeles arbutifolia* and several of the Manzanitas. The beautiful pink-flowered *Acacia* of Constantinople, *Albizia julibrissin*, leans over the bridge by the entrance to the grounds.

The list might easily be made twice as long. Even as it is, I have not described the superb Chestnuts, the American Persimmons, the Cherry-trees, that are among the largest in California, and many other notable specimens that attract little attention here, where they seem lost in the multitude. Sufficient has, perhaps, been said, however, to draw the attention of students to this collection, the finest in northern California. It only remains to be added that the grounds are freely open to the public every day, except Sunday, and will amply repay a visit. Severe thinning is now necessary to preserve the shape of the finer specimens, but if this is properly done these grounds will long increase in botanical and historic importance.

Berkeley, Calif.

Charles Howard Shinn.

Foreign Correspondence.

The Herbaceous Border.

AMERICAN horticulturists will probably be interested to hear something of this comparatively recent development in English gardening, and which has grown to be one of the most popular of the many summer attractions at Kew. Kew has some exceptional advantages for this kind of gardening—namely, sufficient space to devote to each kind of plant used for its most effective display—and what is, perhaps, most important of all, an enormous collection of hardy perennial and annual herbaceous plants to select from. The border is at its best from about the latter half of July till the frost comes in October or November.

A few words descriptive of the border may perhaps be useful. It is a wide strip of richly manured soil about sixty yards long and twenty feet wide, backed on the east side with a long range of greenhouses, and in front a fine carpet-like stretch of lawn. The border is unshaded by trees and well beyond the reach of any tree-roots. The greater portion of it is given up entirely to showy herbaceous plants, but, to give variety and furnish the border in winter, groups of shrubs, such as Roses, Genistas, Olearia Haastii, Golden Privet, Laurestinus, shrubby Spiræas, Aucubas, etc., are planted at irregular intervals. These not only furnish the border in winter, but they also add considerably to its floral attractions in summer.

Two years ago the border was trenched and heavily manured. During dry weather it is watered with the hose. Many of the herbaceous perennials, such as the Sun-flowers, Althæas, Lilioms, Pinks, Phloxes, etc., are left permanently in the borders, but even these are best lifted in early spring and replanted in freshly turned soil.

As an object-lesson for the amateur, and, I think I may add, for many professional horticulturists also, this big collection of showy herbaceous plants has a special value at Kew. Everything is, of course, labeled, so that the visitor can make a selection to meet his own requirements and take down the names of his choice, with a view to procuring them from the nurserymen next year. And it is surprising how many avail themselves of the opportunity thus afforded. Most people desire to grow some flowers, but they are often at a loss to know what will grow, when it will flower and the size it attains under ordinary treatment. As I have said, Kew has exceptional facilities for showing what is good among the newer introductions, and, at the same time, keeping the old favorites from going to the wall. I have made a list of the most attractive of the plants in this border in the latter part of July, grading them according to their heights in three sets, namely, front row plants, middle row and back row. All these plants are in full flower now, and many of them will continue in flower for some weeks longer. At Kew each plant is represented by a large effective group or mass, the smallest plants covering a square yard or more, and the largest five or six times that space. I give the list in the hope that it will prove of some guidance to any one wishing to make a border of the kind described. At the same time I can strongly recommend such a border to all who desire to have a feature of ever-changing interest and beauty, in which respect it is superior to the mixed shrubbery, the ordinary flower-garden, or even the rosery itself. At the same time, it is easily managed by any one who has a little knowledge of outdoor gardening.

Back row—plants five feet or more in height when in flower:

Delphiniums, Hollyhocks—single and double, Bocconia cordata, Lathyrus latifolius, L. rotundifolius, Sweet Peas, Tropæolum majus, Dahlias, Foxgloves, Polygonum polymorphum, Althæa ficifolia, Senecio macrophylla, Mischanthus Sinensis and M. Japonicus (generally called Eulalia), Sunflowers—perennial and annual, Liliom testaceum, L. auratum, L. pardalinum, L. superbum.

Middle row—plants from two to four feet in height when in flower:

Phloxes, Monarda didyma, Lychnis splendens, L. Chalcidonica, Pyrethrums, Campanula persicifolia, C. rapunculoides, Polemonium Richardsoni, Papaver orientale, Potentilla argyrophylla, Lavatera trimestris, Liliom umbellatum, L. longiflorum, L. candidum, Centaurea Cyanus, Hemerocallis, Gladiolus, including C. Colvillei and its variety alba, Anemone Japonica, Amaranthus caudatus, Calliopsis elegans, C. atrosanguinea, Aconitums, Chrysanthemum maximum, Coreopsis grandiflora, Achillea Millefolium, Helenium pumilum, Erigeron speciosus and the variety superbus, Lythrum Salicaria, Centranthus ruber, Scabiosa Caucasica, Eryngium giganteum, E. alpinum, E. Oliverianum, Gypsophila paniculata.

Front row—plants less than two feet in height when in flower:

Stocks, Marigolds, Pentstemons, Carnations, Pinks, Violas, Calceolarias, Geum miniatum, Linaria delphinoides, Clarkias, Sweet Alyssum, Iberis umbellata, Ageratum, Heliotrope, Antirrhinums, Godetias, Phacelia campanuloides, Calliopsis Drummondii, Eschscholtzia Californica, Convolvulus minor, Viscaria oculata, V. cardinalis, Centranthus macrosiphon, Linum grandiflorum, Acroclinium roseum, Tropæolum Vesuvius, Campanula Carpathica, Dimorphothea annua.

London.

W. Watson.

Plant Notes.

STATICE LATIFOLIA.—Just now this plant is invaluable for furnishing that misty halo which gives the touch of completeness to a bouquet of bright flowers. Gypsophila paniculata has served this purpose for a month with its minute white flowers, borne in open panicles and on almost invisible stems, but this is now past blooming. One of our native plants, Euphorbia corollata, with its large, open double-forked umbels of white petal-like involucre, is almost as good. Some of the Galiums, especially G. aristatum and G. hexaphyllum, serve the same purpose, and, indeed, no hardy border should be without all of these plants, for they are invaluable to associate with cut flowers. None of them, however, is better than the Statice, which, unlike the others, bears flowers of a clear blue, but they are so minute that they hardly do more than give a hazy suggestion of their color. This plant is perfectly hardy, and it flowers every year and remains in bloom a long time.

NELUMBO LUTEA.—The Water Chinquapin, which is the common name in the south-west for this native plant, has always been rare in the middle states. A colony of the plants has existed in Swartswood Lake, Sussex County, New Jersey, ever since the settlement of that state, and they are still found there in great abundance, in spite of their wholesale destruction by summer visitors. This year, it is said, they bloomed earlier than usual and a correspondent writes that they are deteriorating in size. Ten years ago leaves from two and a half to three feet across were not rare, and now the average size of the leaf is less than two feet. A reason suggested for this by our correspondent is that the largest flowers are always carried away before they perfect seeds, and that the new seedlings must therefore come from inferior flowers, so that the result is the survival of the smallest. Perhaps it is more probable that the plants are gradually exhausting the soil. This Nelumbo is quite as handsome in its way as the so-called Sacred Lotus, N. speciosa, which is now much more common in gardens than the native plant. It is said to be a little more difficult to cultivate than the East Indian plant, although skillful growers find no difficulty in establishing it. The round leaves are usually held above the water by the stout stem attached to them in the centre, and the pale lemon-yellow flowers are six to ten inches across, and in exceptional cases still larger.

MONARDA DIDYMA.—This is one of our native herbaceous perennial plants which has never been used in the hardy

flower-garden as extensively as its merits warrant. In different parts of the country it is known variously as Crimson Balm, Oswego Tea, Bee Balm, and sometimes Crimson Bergamot. It is not generally abundant, although it is a very familiar wild flower in some parts of West Virginia, where in damp shady ground and on the margins of small streams it often covers areas of considerable extent. Its glowing color and mint-like fragrance make it interesting anywhere, and with good cultivation it will grow much taller than it does in its native home. It ordinarily attains a height of some two feet in its wild state, but it grows more than twice as tall when well cared for, and its conspicuous scarlet heads continue to appear in succession for a long time. Occasionally wild plants are found with pure purple flowers, which are hardly less striking than the crimson form, and well deserve to be perpetuated in gardens. Mr. Jackson Dawson writes that a bed of this plant, some ten feet square, which he recently saw on the grounds of Mr. N. T. Kidder, Milton, Massachusetts, was quite as interesting as anything else in Mr. Kidder's very large collection of hardy herbaceous perennials. Other native species of the Horse Mint, like *M. fistulosa*, with purple flowers, and *M. punctata*, with bracts tinged yellow and purple, also make desirable garden-plants.

TAMARIX INDICA.—This shrub is much more desirable than those belonging to that section of the genus which bloom in the spring on wood made the year before. The late-flowering type has just come into bloom in this latitude, and plants which have been cut hard back every year after flowering throw up slender flexible branches six feet in length and more, making a mass of delicate fern-like foliage, and bearing at the summit of each branch great masses of light pink flowers. Nothing can be more exquisitely graceful than the entire habit of this plant, and it is especially attractive in early morning now, when its branches droop under the weight of silvery dew. The Tamarisks are all good seaside shrubs, as they endure salt spray well.

VIBURNUM LANTANA.—We have more than once called attention to the value of the European Wayfaring-tree as an ornamental plant in this country, where it grows more satisfactorily than many other European trees and shrubs. It is a tall, shapely, many-branched shrub, with attractive healthy foliage and dense clusters of white flowers, which open here earlier in the spring than those of any other *Viburnum* except *V. lantanoides*, the American Hobble-bush, one of the most difficult of all American plants to establish in gardens. The flowers of the Wayfaring-tree are followed by the handsome oblong fruits borne in dense compact clusters, which in the autumn turn blue-black, but just now are bright vermilion-red and exceedingly handsome and showy. It is this midsummer color of the fruit of the Wayfaring-tree which makes it most valuable as an ornamental plant here, as it is most showy at the season of the year when few shrubs are in bloom and before the fruits of most of them have assumed bright autumnal colors, and at a season, therefore, when bright colors in the shrubbery are most in demand and most valued.

VITEX AGNUS-CASTUS.—In our issue last week Mrs. Danske Dandridge spoke of this plant as having bluish purple flowers, but we have received three flower-bearing branches from Mr. Joseph Meehan, each of which bears flowers of quite distinct colors. The one most common is a pale lilac; another is a clear white, with perhaps a tint of lavender, while the third is a true blue. This last is doubtless the most showy of all and the most desirable, since blue flowering shrubs are rare at any season. Unfortunately, this Chastetree, which is a native of the country around the Mediterranean, is not hardy much north of Philadelphia, but *Vitex incisa*, a native of northern China, has proved comparatively hardy in the Arnold Arboretum. The stems are killed back in the severest winters, but since the spike-like clusters of blue flowers appear on the new wood, the slight winter-killing does not interfere with the flowering of this really desirable plant, which is a tall shrub or small tree.

New or Little-known Plants.

Cereus Pecten-aboriginum.

NO more strange or remarkable plants can be found in any part of the world than the great arborescent Cacti of the deserts of Sonora, the neighboring borders of Arizona and Lower California. Three of these Sonora giants are known, and a fourth arborescent Cactus inhabits the arid region of the Peruvian lowlands.

The tallest of these plants is the Suwarro, or *Cereus giganteus*, which dots in countless thousands the low, rolling, stony foot-hills and mesas of southern Arizona with its tall columnar shafts, and is now familiar to travelers on the line of the Southern Pacific Railroad, who see it in perfection near the ancient city of Tucson. The fruit of this remarkable tree, which sometimes grows to the height of sixty feet, is dried and eaten by the Arizona Indians and half-breeds, who also press them to obtain their thick molasses-like juice, which they preserve for winter use. The stout woody ribs which form the trunk, and which practically never decay, furnish rafters for the adobe houses of southern Arizona and fencing for Arizona gardens.

The second species, *Cereus Thurberi*, the largest, although not the tallest, of the group, which sometimes forms forests of considerable extent, has already been described and figured in this journal (vol. ii., p. 64, fig. 93). The third species, *Cereus Pecten-aboriginum*, is less known than the others, and we are glad of the opportunity to publish in this issue (see page 335) an illustration of this plant made from a photograph taken by its discoverer, Dr. Edward Palmer, whose indefatigable explorations of the Mexican flora have brought to light many interesting and undescribed plants.

*Cereus Pecten-aboriginum** is a tree twenty to thirty feet in height, with a trunk a foot or more in diameter, dividing into numerous erect ten or eleven ribbed branches armed with stout, straight, ash-colored spines tipped with black. The flowers, which are produced at the top of the branches, are two or three inches long, with purple succulent sepals, fleshy white petals and a hirsute ovary. The fruit is dry and globose, two and a half to three inches in diameter and covered with "pulvinate densely hairy areolæ, which are for the most part beset with stiff setaceous unequal yellowish spines."

The Indians of Sonora grind the seeds (as they do those of many other species of Cactus) and mix them with their meal, and use the bristly covering of the fruit as hair-brushes.

The existence of this species was first made known by Dr. Palmer's discovery in 1869 of these brushes in the hands of the Papago Indians at Hermosillo, in Sonora, although it was not until 1868 that he found the plant that had produced them. So far as we have been able to learn, this interesting plant is not in cultivation, although Mr. Watson, the author of the species, suggested that it may be identical with the *Cereus macrogonus* of Salm-Dyck, of unknown origin, which has been in gardens since before 1850.

Cultural Department.

Some Raspberry Crosses.

DURING the summer of 1890 I spent considerable time in hybridizing Raspberries. As the result of this work there are quite a number of plants of bearing age now growing on the grounds of the horticultural department of Cornell University. The following brief account will serve to give a general idea of their character:

Gregg × Shaffer (*Rubus occidentalis* × *neglectus*): Five plants from seeds of the Gregg fertilized with pollen of the Shaffer are now growing and fruiting. Four of them resemble the Gregg in character of plant, and one approaches the Shaffer more closely. In character of fruit-cluster three are more or less elongated like Shaffer, and two are aggregated like the Gregg. The fruit varies in character between that of

* Watson, *Proc. Am. Acad.*, xxi., 429 (1886).—Brandegee, *Proc. Cal. Acad.*, ser. 2, iii., 141.—Vasey & Rose, *Contrib. U. S. Nat. Herb.*, i., 39.—Sargent, *Silva*, ii., 52.



Fig. 54.—*Cereus Pecten-aboriginum*, in Sonora.—See page 334.

the two parents. On one plant it resembles the Shaffer; on the other it is more nearly intermediate, or nearer the Gregg. In the darkest of them the color is much like that of a black-cap just before it is fully ripe.

Fontenay \times Cuthbert (*Rubus Idæus* \times *R. strigosus*): There are five plants of this cross, four of which did not germinate till the second spring after sowing the seed, and they are bearing little or no fruit. Three resemble the Fontenay in character of growth, one the Cuthbert, and one is intermediate. The little fruit thus far produced shows no particular value.

Shaffer \times Cuthbert (*Rubus neglectus* \times *R. strigosus*): Thirty-one plants of this cross are growing, combining the characters of the two parents in various intermediate stages. The majority seem to resemble the male parent in character of plant and method of propagation. Of those which germinated the first spring after sowing and are now fruiting well, some produce typical red Raspberry fruits as light as Cuthbert in color, while others are dark like Shaffer. One in particular bears a promising large, bright red berry, resembling Cuthbert in shape and flavor. Another productive plant bears a medium-sized dark berry, which has an unusually rich and agreeable flavor. The greater number, however, have not produced fruit to any extent the present season.

Cuthbert \times Shaffer (*Rubus strigosus* \times *R. neglectus*): Three plants of this cross show various intermediate characters, but nothing of especial interest at present.

Ada \times Cuthbert (*Rubus occidentalis* \times *R. strigosus*): Three comparatively weak hybrids, the offspring of the above parentage, are growing, but none of them are yet bearing fruit. All seem to resemble the male more than the female parent in the character of the canes. As yet they show no indication as to the manner in which they will propagate.

The above are all crosses between different species, if we recognize *Rubus neglectus* as a species. At least, the types are different, whether we regard them as species or not. Of crosses between varieties of the same species there are three plants from Cuthbert pollenized with Turner, and seven plants of Turner \times Cuthbert. None of them are bearing sufficiently to indicate their value, but they show the same general law of intermediate gradations as the others.

Perhaps the most interesting point in connection with these results is the emphasis which they give to the value of breeding for a purpose in the case of plants as well as of animals. Horticulturists, more, perhaps, than any other class of people, have depended chiefly on chance to aid them in their progress toward an ideal excellence of the various fruits which they cultivate, yet there is no necessity for this. The laws governing the reproduction of plants are no more intricate than those governing the reproduction of animals, if, indeed, they are not the same. There is nothing new in the discovery that plant-crosses combine the characters of both parents in various degrees, and that nothing radically different need be expected, but it needs constant repetition and enforcement. With this principle in view, systematic, persistent effort to combine the qualities desired ought soon to give us varieties quite in advance of the ones we now have.

University of Nebraska.

Fred W. Card.

Cannas.

NOTING the improvements in Cannas several years ago, a friend of mine gave it as his opinion that we should soon have varieties with flowers as large as those of the *Gladiolus*. That stage was past when Madame Crozy was introduced, some three years ago. This variety has been the standard by which all subsequent varieties of its color have been judged. When looking at a large bed containing some three hundred plants of Madame Crozy recently at the University garden, Cambridge, it was hard to imagine how this can be excelled. The dwarf, erect, free-flowering habit of this variety, with its large spikes of scarlet flowers, bring it close to absolute perfection.

Going to Claredon Hills, Boston, the home of Mr. James Farquhar, I was astonished to see some of Crozy's latest productions, which, by special favor, Mr. Farquhar was allowed to select while in France last summer, some of which exceed even Madame Crozy in brilliancy of tone and finish. Most meritorious among these are:

Baron M. D. Hirsch: Flowers large, but brighter than the type, with a very narrow, but clearly defined, yellow edge.

Paola Radaelli: Deep crimson flowers and bright yellow edge.

Antoine Crozy: More erect flowers.

C. H. Morlin: Large, compact, vermilion spike and handsome foliage, which give it great promise both as a bedder and a pot-plant.

James Farquhar: Flowers striped as well as bordered with yellow.

Van dem Berg: With considerably larger flowers than the type, and of a lighter shade of scarlet, and a wide yellow margin. It is a strong dwarf grower.

Among some of the Crozy seedlings raised at Claredon Hills is one very bright and beautiful variety well adapted for bedding. It is dwarf, and though the flowers are small, the spikes are large and even, and last for a long time—a very good recommendation. It has never been named, and Mr. Macdonald, the foreman, said it had not been kept because it was thought to be any better than Crozy, but because it was different, and just as effective as a bedder.

Among yellow varieties of recent introduction it is hard to say which is at the head. Captain Suzzoni has large round-petaled flowers, spotted with reddish brown, but does not carry either so large or handsome a spike as Florence Vaughan, the flowers of which are more densely and darkly spotted. Following this is Mrs. Cowing, raised by A. H. Fewkes, of Newton Highlands, Massachusetts, and recently decorated with a silver medal by the Massachusetts Horticultural Society. This carries an elegant spike of carmine spotted flowers, each standing out well and evenly, and giving a certain fullness of aspect often lacking in others.

Monsieur Crozy's introductions for 1895 will include the grand yellow Madame Montifiore, which is a very strong grower. The spikes are large, erect and open. In general form and color it resembles Captain Suzzoni, and may be described as a great improvement on that variety. I could not help observing how well Admiral Courbet, a fine canary-yellow bedder introduced several years ago, holds its own among the newer introductions.

While visiting among the growers I found every one in love with J. D. Cabos, the comparatively new bronze-leaved variety with salmon flowers. Admiral Aurellan, one of Crozy's for 1895, is several points ahead of this. The flowers, on comparison, are larger and more regular in outline. Ingegnolo Fratelli is another handsome dark-leaved variety with buff-colored flowers. General de Miribel is salmon, with green foliage, and Secretary Nicholas clear brick-red. Charles Henderson, so far as seen, has not come up to general expectation. The spike is open, regular and erect, and the flowers, though not extra large, are a very bright crimson. The general opinion is that it does not come up to Alphonse Bouvier. What was once considered a defect in this is now considered a recommendation by many. The hanging spike, when half open, is succeeded by a secondary one just above it, and considerably enhancing its effective value. As far as I have seen, there is nothing new in the way of Paul Marquant. Its dwarf, erect habit and full spikes of satiny, salmon-red flowers should recommend it to all, and especially for winter blooming. Paul Bruant has extra-large vermilion-colored flowers, but they do not hold well, so that there are never many open at one time. Egandale is promising, and apparently is better as a foliage-plant than President Carnot. To the many admirers of this lovely variety it will appear to be saying a good deal.

François Crozy is a new green-leaved, salmon-tinted variety, of which much was expected. It does not seem to hold its color well. As the first flowers to open were very fine in tone, I should like to hear from growers whether this color defect is likely to be characteristic.

Speaking about raising Cannas from seed, Mr. Macdonald showed me a lot of self-sown seedlings scattered where the bed had been last year, and particularly where a bunch of fifty or so came up together on a spot where he had dropped a handful of seed the previous autumn. From this one may conclude that Canna seeds sown in a cold frame in the autumn will come up the following spring.

Wellesley, Mass.

T. D. Hatfield.

Violet Notes.—August is a critical month with Violets, for it is now that the dreaded "spot" makes the greatest headway. Some growers affirm that the disease is started at this season by the hot sun glare on the plants while the leaves are wet with dew, and they contend that if the sunshine is kept from them until the foliage is dry that the "spot" can be warded off. In my experience, however, plants have been quite as badly diseased when grown where the early morning sun did not strike them as those in the sunniest location possible. Until this time our plants are clean, with the exception of some old roots of the Cape Cod or Double Russian variety, wintered in the open. It is too soon to be confident, however, and a few days may bring quite a change. We make a point of looking over our stock at least twice a week for signs of disease. All spotted leaves should be picked off, and badly

affected plants pulled up and burned. This season has been so extremely dry that we have found it necessary to water the plants on several occasions. Plants dry at the root are, I believe, more liable to disease than those kept moist and growing. Swanley White spotted very badly here last year, but so far this season it is perfectly clean, and so also is Lady Hume Campbell. Plants that are being grown along in the frames where they are to bloom should not be kept too much shaded; after three o'clock in the afternoon the sun may be allowed to shine on them. A thorough soaking of water twice a week will keep them growing satisfactorily. Runners will be forming on all plants now, and these should be cut off about every ten days, as they weaken the crowns if they are allowed to run freely. Plants should be lifted from the open from the beginning to the middle of September. Manure and compost for them may be put into the frames at any time now, and this will save some of the rush when the time for planting arrives.

Carnations.—Carnation-plants grown for summer blooming out-of-doors require regular watering or the flowers will be small. A soaking of moderately strong liquid manure, after a wetting with clear water, once a week proves beneficial. Fading flowers should be picked off, both on account of appearance and for the welfare of the plants. Straggling shoots need tying in occasionally, as flowers near the ground are likely to be ruined in a heavy shower. Among pink varieties now being tested as summer bloomers, William Scott and Nicholson are flowering freely. Plants for winter blooming have made excellent growth this season, the hot dry summer having evidently suited them. The next few weeks will be a season of vigorous growth for them, and they will need looking over once a week and topping. Some varieties, as Mrs. Fisher, Hector and Ferdinand Mangold, have a marked tendency to produce flowering-shoots at this season. Just when topping should be discontinued depends on the variety of the plant and how soon flowers are desired indoors. As out-of-door Carnations, under favorable conditions, may be had until the middle of October, indoor plants need not be brought into flower before that time. The compost for the beds or benches should be turned over, and if cow-manure has been mixed in it a sharp lookout must be kept for the larvæ of the common May beetle, the white grub and muck-worm, as it is better known. The larger grubs may easily be hand-picked and killed when the compost is being turned, and if it is carefully examined again when carried into the benches the bulk of these pests may be destroyed. Steaming or heating the soil in some other way seems to be the only effectual way to entirely kill them. When Carnations are sickly, it is owing, in many cases, to these grubs eating the bark from the stem below the surface of the soil, and also to their gnawing the roots through. A writer in a contemporary journal states that the pest may be destroyed by washing diluted kerosene emulsion with plenty of water into the compost, but not having tried this method I am unable to speak as to its efficacy.

Taunton, Mass.

W. N. Craig.

The Quince Rust.—The station has lately received specimens of Quinces, from different parts of the state, affected with the rust, which shows itself in bright orange patches on the fruit or leaves. The rust is caused by a fungus, *Roestelia pyrata*, which also attacks the Apple. The fungus spends part of its life on the Red Cedar and causes what are familiarly known as "Cedar apples," which attain their growth and germinate in April and May. The spores from the Cedar-apple stage pass to the Apple or Quince, where they germinate and cause the bright orange rust on the young fruit or leaves, rendering the fruit worthless. In some cases the disease is sufficiently serious to cause defoliation of the tree, but this severity is not common. Bordeaux mixture, applied as soon as the first leaves appear, is used to check the fungus. It is also recommended to remove all Red Cedar trees in the vicinity of an orchard.

Cornell University.

G. Harold Powell.

Correspondence.

A Border of Herbaceous Perennials.

To the Editor of GARDEN AND FOREST:

Sir,—Many of us find a great fascination in a perennial garden, and an interest renewed every spring as our old friends re-appear to greet us, creating a sentiment that cannot be gained by the use of annuals, and still less by the familiar beds of Geraniums. Nothing seems easier in theory than to make a good border, with no bare spaces, at any season, a constant succession of bloom, and with all our colors in perfect har-

mony. Unfortunately, in practice, the difficulties and disappointments are many. Some of these difficulties could be avoided by a more careful description in the nurserymen's catalogues; but the virtues alone are usually recorded in such descriptions, and we are left to discover by experience the faults or peculiarities of each flower.

The creation of a new garden brings surprise after surprise. In early spring we find large spaces that remain obstinately bare; later more bare spaces occur, even more hideous, where the week before it had been a blaze of color; some flowers that were so fine the first year have grown coarse and rank the second, and so on through the year our disappointments are endless.

Now, in our catalogues we find no explanation of our troubles; no mention is made of any of these peculiarities. Much information can be found in Robinson's *English Flower Garden*; but, unfortunately, it contains advice for a climate radically different from ours, and I have looked in vain among American books for any advice of value in forming a perennial garden.

It would seem as if much good could be accomplished by a series of articles on the subject, comprising, first, general advice as to the arrangement and grouping of spring and autumn bloomers, the advisability of massing many plants of the same kind, possibly giving some good combinations of color among plants that bloom simultaneously, and the like.

After this a short catalogue of the best-known flowers might follow. With each flower the ordinary florist's description of height, general habit, time of blooming could be given; to be followed by the more valuable information that we can find nowhere—whether it comes up early in the spring or not; if it dies down after blooming or retains its foliage throughout the entire season; whether it grows coarse and unfit for the garden in a year or two, or improves with age. In other words, a description of its habit and peculiarities that would enable us to place it intelligently in our garden.

I am aware that I am proposing a somewhat long series of articles, but there still remain many weeks before another spring, and I feel sure that they would be read with great interest. At present our sources of information are scanty and meagre, and I hope that GARDEN AND FOREST will come to our aid and furnish us more information on a subject that interests so many of its readers, either in the form suggested above or in some other better way.

Boston, Mass.

H. S. H.

Chrysanthemums for Exhibitions.

To the Editor of GARDEN AND FOREST:

Sir,—After the Chrysanthemum-shows are over, one invariably sees in the gardening papers letters on the subject of judging. Often they are from dissatisfied competitors. Some good points, however, are occasionally made, and one can easily see that the system of judging is not all that it should be. There is never a year but some changes are made in the schedules, and there can be no doubt the committees honestly desire to make the work of the judges easier.

During recent years in this country we have passed almost altogether from exhibits of chrysanthemums on boards to long stems in vases, with foliage. To a great many persons it is doubtful whether one extreme is not as bad as the other. The long stiff stems with foliage has nearly shut out all but the coarser Japanese varieties. Raisers of new varieties are every year compelled to discard many fine flowers, often superb in form and color, solely on account of a weakness in the stem. Trade discrimination is in a great measure the cause of this. Florists now almost wholly decide what a flower shall be. Standard colors rule, clear and decided, with stiff stems and good lasting qualities, and any flower lacking these qualifications gets no recognition. Many of my gardening friends, failing to see beauty in these formal exhibits, think great improvement may be made by the introduction of more artistically arranged vases of flowers, with varying lengths of stem, some bending and others standing out at various angles. And again, the foliage prerequisite, shuts out many excellent varieties which can only be grown on a crown-bud, and the result will undoubtedly be that these in course of time will be discarded.

Size being now almost the only criterion, the compact form and regular outline of the incurved Chinese is seldom seen; at least, on this side of the Atlantic. This is much to be regretted. So, too, with the Anemone-flowered and the Pom-pones. It is to be hoped, when the limit in size is reached, that more attention will be given to the neater and more refined forms. Something might be done at the forthcoming

meeting of the Society of American Florists toward broadening the scope and methods of judging, so as to include the refined and artistic as well as the majestic types. With regard to the judging of seedlings there should be a national committee, to meet three times during the season at some central city like Buffalo, and pass upon all new varieties. It should be representative, including florists, both growers and retailers, together with professional and amateur gardeners.

Wellesley, Mass.

T. D. Hatfield.

The Forest.

Mixed Oak and Beech Forests of the Spessart: Management by the Bavarian Government.—V.

CONCLUSION.

YOUR readers may justly ask whether the income realized from these forest-lands justifies the enormous care and pains which are bestowed upon their management. The net annual money return from that range which of late years has paid best, Rothenbuch, has been about four and a half dollars an acre. This represents the money value of the timber cut in the compartments where cuttings are going on, of thinnings in other compartments, and of other sources of income minus the outlay incurred on the working and management of the entire range. This low figure may appear disappointing, and the remark will doubtless suggest itself to some of your readers, whether it would not be more profitable to sell the standing timber of the entire forest and to invest the money in Government securities. Certainly, if it were possible to sell the entire growing stock at existing rates, the interest on the money realized would exceed the net income at present derived from the forests. But, as a fact, it would not be possible to effect the sale of such large quantities at existing rates. To prevent the glutting of the market and a great fall of prices it would be necessary to spread cuttings and sales over a very long period, and if this were done it would be more economical not to destroy the forest, but to continue its management so as to insure its regeneration. The above proposition, if reduced to a practical shape, would amount to a shorter length of rotation. Instead of allowing the Oak to attain a mean age of 300 years, younger trees would be cut. That, however, would not answer at all, it would not satisfy the lumber trade which demands large timber and pays a high price for it. Prices would fall, and this would upset the data upon which the calculation was based.

Coniferous woods, it has been explained above, grow more rapidly, and consequently the rotation is shorter, the capital value locked up in the growing stock does not accumulate to the same extent as is the case in the Oak-woods of the Spessart. Hence the rent which the forest produces is higher and the capital value of land with the growing stock upon it realizes the same interest, while maintained and managed as forest, as it would, were land and growing stock sold and the amount invested in three per cent. consols. The state forests of the Kingdom of Saxony are all managed on short rotations. A large area is stocked with pure Spruce-forests, and many of these forest-ranges yield a net money return of nine dollars an acre and more, which, in the case of some, amounts to four per cent. on the capital engaged (land and growing stock).

That the existing system is not financially unreasonable is proved by the fact that large forest-areas in the Spessart, which belong to private proprietors, are managed on principles similar to those which regulate the working of the forests belonging to the state. The existing system supplies the market with the wood and timber required for building and for other purposes and yields a moderate but certain rent per acre, which probably will increase considerably, for the Slavonian forests, which at the present time send large quantities of heavy lumber to the saw-mills at the foot of the Spessart, are not all managed on the same conservative principles as the Spessart, so that sooner or later that source of supply will run dry.

Nevertheless, your readers may be right in thinking

that an annual rent of four and a half dollars an acre would not satisfy forest-proprietors in America. The forests of the United States, however, have advantages which ours do not possess. From all accounts it seems certain that some of the most important forest-trees of North America—the Yellow Poplar of the Alleghanies, the Sugar Maple, the White Pine, the Redwood of California and the Douglas Fir of Oregon and Washington—grow much more rapidly than most of the forest-trees of Germany. And what is known of their regeneration by self-sown seedlings seems to show that, in many respects, the task of the forester in the United States will be easier than it is in the Oak-forests of the Spessart. And the most important point is that, with the rapid growth of population and wealth in the United States, a steady and considerable rise in timber prices may be regarded as certain. Success, however, in this business is impossible unless the principal forest-trees of North America are studied from a practical point of view in the same manner as the forest-trees of Germany have been studied. That the Sugar Maple demands shelter when young; that it, therefore, probably belongs to the same class of trees, in regard to light and shade, as the Beech and the Silver Fir, we have learned from Professor Sargent's *Silva of North America*. The forester will have to utilize such data concerning American trees, and he will have to complete them by his own observation in the forest; he must test them by practical experience and apply them in the treatment of his woods.

It is a common saying in Europe that in the United States the dollar reigns supreme. As a proof, however, that this statement is unjust, we need only invite attention to the enthusiasm and the disinterested devotion with which many branches of abstract science are cultivated in the United States. Let the foresters of America study the growth and varied requirements of their principal forest-trees with the same enthusiasm and devotion which distinguish American men of science, and the success will not be wanting. And forest-proprietors who will consent to apply the result of such studies in the management of their forest-estates will derive substantial advantages in the shape of increasing rents and a steadily growing capital value of their estates. Somebody, indeed, must set the example, and it will take some time before that example is followed by others. That example should, if possible, be set in forests, the management of which promises to be successful not only from a professional, but also from a financial point of view.

Some of your readers may hold that in America the profession of forestry ought to be built up entirely upon an American basis, and ought not to be based upon experience gained in Germany or France. Surely such national pride is an honorable feeling. In this case, however, it would lead to endless waste of time and to much disappointment. Forest-management is based upon very plain and simple principles, but it is a singularly difficult business. Excellent theories have proved quite impracticable. Actual experience is the only safe guide. Hence it is better to learn from actual experience in those countries in which the profession of the forester has attained its highest development. It would be waste of time not to utilize the lessons taught by success and failure which foresters have learned in other countries. It would have been easy, and it would have taken up much less space, if the plain and simple principles on which the treatment of mixed woods of Oak and Beech is based had been set forth in brief and precise language. Instead of this, it has been explained in detail how the present management of the mixed forests in the Spessart has come about. My object in venturing to attempt this has been to induce American foresters to come and see for themselves.

If this statement serves as a guide to some who will afterward apply what they have seen in managing the forests of their own country, the object which the author had in view will have been attained. Forest-management

in British India has been based upon forestry as it had developed in France and Germany, and it is not unreasonable to suppose that good forest-management in America will be built up upon the same foundation.

Bonn, Germany.

Dietrich Brandis.

Meetings of Societies.

Agricultural Science in Brooklyn.

THE Society for the Promotion of Agricultural Science held its fifteenth annual meeting in Brooklyn last week, at which Professor William Saunders, Director of the Experiment Station System of the Dominion of Canada, was re-elected President, and Professor William Frear, of the Pennsylvania State College, was re-elected Secretary. Dr. Wiley, Chief Chemist of the Department of Agriculture, is associated with these gentlemen as the third member of the Executive Committee. The following are brief notes of some of the more interesting papers which were read at the sessions of the society:

Professor John B. Smith, of New Brunswick, New Jersey, read a paper on "Nurseries as Factors in the Distribution of Insect Pests," and after showing how complicated the business of fruit-growing had become, he explained that nurserymen were compelled to search the world over in order to secure varieties suited to different locations and different markets, and to find trees which are proof against blight and insects. The last thing that occurs to an exporter or-importer of trees is an examination to ascertain whether they are free from insects, and in this way many destructive and troublesome species have been introduced into the United States by nurseries, and have been distributed from one part of the country to the other. As an example of this, Professor Smith said that in their search for curculio-proof Plums, two New Jersey nurseries obtained some eight or nine years ago some Japanese varieties from California, and also some Idaho Pears from another Pacific coast nursery. Both the Plums and Pears were infested by the San Jose scale, *Aspidiotus perniciosus*, and they multiplied unchecked in their new surroundings. Plums and Pears were grafted and budded from this stock, and the insects were propagated as well. Trees left to grow and bear were speedily overrun and served as distributing centres, infecting the nursery stock sent out to customers, and in less than half a dozen years this scale has been spread, principally by two nurseries, over the entire eastern United States from New York to Florida. Plant diseases are even more generally spread by nurseries than insects, and in the discussion of this paper it appeared that the Peach-yellows and the leaf-curl of the Peach were both disseminated in this way. There would be little difficulty in preventing the distribution of insects by nurseries on trees under proper supervision. It would be more difficult to arrest the spread of plant diseases, but it would seem that it might be a legitimate duty of experiment stations or of other institutions to look after this matter.

Professor B. T. Galloway, of the Department of Agriculture, read a paper on "The Growth of Lettuce as affected by the Physical Properties of the Soil." An especially good quality of Lettuce is forced in the greenhouses about Boston, where a strain with uniform, compact heads, yellowish white within, and light yellowish green without, free from rot or burn, is produced. Of course, in order to grow perfect plants, there must be a proper degree of light and of heat, pure seed and general skill; but, after all, an essential factor is the physical properties of the soil. First-class Lettuce cannot be grown under any conditions unless the soil has certain physical properties, which, together with the relation of the soil to circulation of air, moisture and heat, control the development of the crop. This paper was the result of some investigations into these properties of the soil, and it was an attempt to point out some of the differences between a soil that will grow good Lettuce and one that will not. The soil in which the best Lettuce grows—that is, Lettuce of the type found about Boston and Providence, where two hundred acres of specially constructed greenhouses are used in forcing this plant—was here described and a mechanical analysis given. On comparing it with gneiss-soil of Maryland it was shown that the Boston soil contained but 3.10 per cent. of clay, while Maryland soil contained 28.82 per cent. The Boston soil contained 14.59 of silt, and the Maryland 34.92. Although the Boston soil may be called sandy, its capacity for moisture is remarkable, as was shown in a graphic illustration, which gave the daily moisture-content

for Boston and for Maryland soils in March, 1894, the first averaging twenty-eight per cent. of water, and the latter sixteen and a half per cent. Again, the Boston soil contains more air, as was shown by an actual determination of the empty space, and as was evidenced by the development of the roots. Professor Galloway went on to detail some interesting experiments with prepared soils, one with a mixture of two parts of drift-sand and one of greenhouse-soil, another of greenhouse-soil alone, and the third with Boston soil and decomposed manure. Without going into figures, it is enough to say that the bed of drift-sand and greenhouse-soil and the bed of Boston soil both gave results much superior to those obtained from the second bed. Altogether, a most interesting field of research was opened by this discussion and the publication of Professor Galloway's paper, with its illustrations and tables, will be welcomed by every one interested in scientific agriculture.

Professor Beal read some notes on the "Vitality of Seeds Buried in the Soil." Fifteen years ago he had buried twenty lots of fifty seeds each of twenty-one species, mostly weeds, the seeds being mixed with damp sand and placed in eight-ounce bottles. After the end of five years, and again at the end of ten years, these seeds were tested, and now at the end of fifteen years an additional test has been made which shows that many of the seeds still retain their vitality. They were sowed this spring and are still coming up. The seeds of some weeds belonging to the Mustard family, like Shepherd's Purse and Pepper Grass, all retain their germinative power, while those of May Weed (*Anthemis Cotula*), Evening Primrose, Purslane, Narrow Dock and Mullein are still very much alive.

In another paper on the "Vitality of Clover Seed," Dr. Beal stated that some twelve years ago he selected from a second crop of Red Clover the seeds of fifty good heads from five plants, which were placed in a glass bottle and exposed to the light. On the first of June of this year fifty seeds of each lot were tested, and a month later a second lot was tested, which showed that an average of thirty-six per cent. germinated. As a practical matter farmers may, therefore, rest assured that if their Clover-seed is well cured and kept free from insects and vermin there is little danger but that it will germinate for at least five years.

Professor W. E. Stone, of Purdue University, gave an account of some investigations of the oil of the Black Walnut, from which it appears that the actual amount of oil contained in this nut is fifty-five per cent. of the weight of the kernel. The oil extracted by pressure was a pale straw-color, with a faint but agreeable taste and odor characteristic of the nut, and after standing six months the sample remains free from unpleasant taste and smell. The oil belongs to the class of "drying oils," and a sample exposed to the air some days steadily increased in weight and became hard and varnish-like, a property also characteristic of the oil of the English Walnut. One of the valuable properties of the oil of the English Walnut is its adaptation to the manufacture of an exceptionally fine varnish. So far as can be ascertained short of a practical test, our Black Walnut oil possesses all the qualities for a similar application, and undoubtedly is capable of many practical uses if occasion demands.

Professor L. R. Jones gave a new method of combating the minute flea-beetle, which is very often destructive to the Potato crop, since these insects appear suddenly and in great numbers, and in a few days completely skeletonize the leaves of the plants. In spraying with the Bordeaux mixture, to prevent the Potato-blight, it was found that the mixture was quite as effective against these insects as against the spores of fungi.

Professor E. V. Voorhis gave an account of some experiments with Crimson Clover in New Jersey which go to prove that this is an admirable crop to sow in orchards, where it helps to increase the nitrogen supply, and can be plowed under, or may be allowed to stand and reseed the ground, acting meanwhile as a protective mulch.

Dr. Veranus A. Moore, of the United States Department of Agriculture, made an inquiry into the alleged relation existing between the Burrill disease of Corn and the so-called Corn-stalk disease of cattle, with the result that he found no clinical or experimental evidence sufficient to show that the disease of Corn is responsible for the disease in animals. There are, on the contrary, many facts to support the assumption that there is no causal relation whatever existing between this malady and the so-called Corn-stalk disease of cattle.

Professor B. D. Halsted spoke of the weather in relation to injurious fungi. Professor F. H. King presented some interesting observations on the "Rate of the Percolation of Water from a System of Tile Drains." Professor L. H. Pammel, of the Iowa Agricultural College, read a paper on "Climate and

the Character of Soil as Factors in the Development of Rust." Professor C. E. Bessey gave an account of the Russian Thistle in Nebraska. Professor F. A. Gulley, of Tucson, Arizona, read a paper on Canaigre, a *Rumex* which grows wild in the south-west, with the result of some investigations into its value for tanning purposes. Professor H. J. Patterson, of the Maryland Agricultural Experiment Station, discussed the "Effects of Different Fertilizing Elements upon the Composition and Combustibility of Tobacco."

Notes.

It has been an unfavorable season for late-flowering annuals, but China Asters, in excellent quality, are now seen in abundance on our street flower-stands, and are taking the place of Sweet Peas, which are passing out of season.

According to an English correspondent in the *Fruit Trade Journal*, the apple crop in England will be the lightest known in years. This promises a good export market for American apples, but the crops both in the United States and in Canada are estimated to be less than a fair yield. Nearly four hundred barrels of apples have already gone forward to England from this port.

By the burning of the Knox Warehouse, in Washington, a few days ago, Professor Scribner lost his herbarium of North American Grasses, which contained, probably, the best studied and arranged collection of these plants in existence, including many types as well as a number of California species of Dr. Kellogg's collecting, which were in Professor Scribner's hands for study. The loss is an almost irreparable one.

Mr. Michael Barker, who has for the past six years been connected with the Botanic Garden in Cambridge, Massachusetts, has taken charge of the forcing house in the Cornell University Experiment Station, and will be engaged in other horticultural work there. It is proposed to give considerable attention to Chrysanthemum culture, and growers of these plants who have trouble with insects or fungi are invited to correspond with the station.

At the sale of the second part of the Pickering Lodge collection of Orchids in London last month the prices did not range as high as at the first sale, nevertheless *Cattleya Mendelii* Bluntii brought one hundred guineas, a magnificent specimen of *Lælia crispa superba* brought fifty-two guineas, *Sobralia Lucasiana* brought forty-six guineas, *S. xantholucæ alba* brought forty-four guineas, *Cattleya Gaskelliana alba*, in flower, brought thirty-eight guineas, and so on.

There have been light showers near this city during the past fortnight, but the intense drought can hardly be said to be broken. The trees in the parks have some of them begun to shed their foliage, and of course unhealthy and old trees and those standing in exceptionally dry places are affected the most. Of the larger kinds, however, only three show any general tendency to drop their leaves, namely, the English Elm, Silver Maple and European Lindens. The native forest-trees in Prospect Park are remarkable for their freshness and healthy color under these trying conditions.

Edward L. Rand, of Cambridge, Massachusetts, and John H. Redfield, Curator of the Botanical Department of the Philadelphia Academy of Natural Science, have just issued "A Preliminary Catalogue of the Plants growing on Mount Desert and the Adjacent Islands," to which a geological introduction, by William Morris Davis, and a new map of the island are added. The flora of Mount Desert, as here enumerated, contains 680 species with seventy-one varieties of flowering plants in 312 genera, and 606 species with 133 varieties of Cryptogamia in 215 genera, or a total of 1,286 species and 527 genera. In matters of nomenclature the authors have followed the latest edition of Gray's *Manual of the Botany of the Northern States*.

In the current number of the *Orchid Review* it is stated that many English cultivators of Orchids are now using Polypodium-fibre as a substitute for peat. It has been largely used on the Continent with *Odontoglossums* and *Oncidiums*, and English growers find that *Cattleyas* and *Lælias* grown in this fibre show an improvement over those potted in peat and grown under identical conditions. The fibrous roots alone are used, all pieces of rhizome being discarded. The material is obtained from the Ardennes, where *Polypodium vulgare* grows in enormous quantities on the rocks and trees, from which the masses of roots are stripped and packed in bales. These are cut small with shears, then mixed with chopped sphagnum

and used in the ordinary way. One advantage which this fibre offers is that it contains no fine earthy matter, so that the plants can be watered freely without the risk of the compost becoming sour, and the roots soon take possession of the whole. It will not answer for all Orchids; *Dendrobiums*, for example, are said to show no improvement with it, while *Cypripediums* fail when placed in it, as might be expected, since they are terrestrial, and prefer good fibrous loam to peat.

It is now possible to get Florida oranges in New York all the year through since growers have been developing varieties which fruit very early and others which fruit very late. Some which have been held in cold storage are now selling at seventy-five cents a dozen on the fruit-stands, and while not quite as juicy as in winter are still of good flavor. Rodi oranges, the summer Mediterranean fruit, command thirty to fifty cents a dozen. Along with these, Jamaica oranges will soon be offered, the first shipments of which have arrived here green and are being ripened up for market. Limes are in considerable demand at fifteen cents a dozen. Moore's Early, Niagara and Delaware grapes of good quality and attractive appearance are now coming from this state. These bring from fifteen to twenty-five cents a pound at retail. Princess Anne cherries, from California, were seen on our fruit-stands until within a week past. The last blackberries, small and dry, sell slowly at ten cents a quart, while huckleberries, more plentiful and in better condition, bring thirteen cents a quart. Orange Pippins, Maiden Blush, Keswick Codlins and the firmer Coxsackie Pippins are already being shipped to England, 165 barrels having been forwarded last week.

Mr. Joseph Meehan writes to the *Country Gentleman* that he prefers to transplant most coniferous evergreens in August and September. Of course, evaporation from the leaves will be quite as rapid then as at any other season, but new root-fibres will form in the warm soil much more rapidly than at any other time. The soil in midsummer resembles soil in a propagating-bed, and trees and shrubs should be treated just as cuttings are. They should be shaded, if possible, and the roots should be kept moist. The holes for the trees, in Mr. Meehan's practice, are dug to the proper depth, and good earth is put in places where the soil is poor. Fine earth is filled in about the roots and pounded to make it solid, but the roots are never bruised. When the holes are half-filled several buckets of water are poured in, until the soil becomes mushy. After the water has soaked away more soil is filled in, but the hole is not completely filled. The next day the roots are thoroughly soaked again; on the third day the filling of the holes is completed, and no more water will be required. The roots will be moist for a week, and by that time new fibres will have put forth. When a good ball of earth is retained about the roots Mr. Meehan has never found it necessary to shade the trees or to sprinkle them, but there is no doubt that shading could be practiced with advantage where it is practicable, and syringing the foliage a few times a day would certainly be a benefit.

Perhaps the demand for flowers has never been as great in all the history of commercial floriculture as it was in Paris at President Carnot's funeral. As soon as the news of the President's death reached the French capital it was almost impossible to secure flowers at any price. Common roses, which were selling at a franc a dozen the day before, advanced at once to three francs, and blooms of La France Roses, which sold before at six francs a dozen, at once brought a franc each. Other flowers rose in proportion under the immense orders received from all directions. The Emperor of Russia, for example, ordered through his Ambassador a wreath costing 8,000 francs from a leading florist in the Rue Royale. This firm could not undertake the order, having received more commissions than could be executed. Finally, another florist was secured who could furnish a wreath for 5,000 francs. All kinds of flowers were used for the wreaths, and anything that could be secured was used. The leading florists bought at once whole beds of Pansies, Marigolds, Marguerites, the entire product of Rose-borders and houses filled with flowering Orchids, and paid any price that was asked. Most of the European sovereigns sent magnificent wreaths of rare and beautiful flowers, and various societies and associations in France, as well as different cities, sent wreaths of colossal size. That from the city of Bordeaux was made of roses and white laurel, including a pomegranate velvet pillow with an inscription upon it in gold letters. This tribute was raised by a subscription which was limited to a franc for each person, and it measured more than thirty-two feet in circumference.

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Nature and Art.

WRITING recently in the *Revue Horticole*, Monsieur Edouard André, the most distinguished living representative of the art of gardening in Europe, had occasion to refer to the times, before the middle of our century, when the school represented by Thouin, Le Breton and the Buehlers was dominant in France. "In those times," he said, "much attention was rightly paid to the harmony of the preparatory plan, but it was not the sole preoccupation of designers of gardens, while at present they sometimes seem more solicitous about the effect of their composition as it will show upon paper than as it will show upon the ground. Formerly the search for beautiful results was made, often through patiently extended experiments, upon the spot itself, and not in the office; and this method was the right one. The excessive care now devoted to the theoretical drawing, which so often leads to disillusion in the actual work, must surely disappear in the near future. It will be understood that the tracing of paths, which to-day is thought to constitute in itself the art of garden-design, is only a portion of this art, and not the most important portion. It will be felt that, above all, varied scenes must be created within an harmonious whole, and that the means of approach to these scenes should be simply accessory."

These words should be laid to heart by American landscape-gardeners especially, for the temptations toward undue dependence upon office study are even greater in this country than elsewhere. We have as yet very few landscape-artists of recognized learning, taste and skill, and the services of these are apt to be required, not merely in the vicinity of their homes, but in the most distant parts of the country. And, while the vast size of this country makes frequent visits to the scene of work, or a prolonged residence there peculiarly difficult, on the other hand it makes them peculiarly needful; for within the United States localities differ so radically in conformation, soil, climate and vegetation, and consequently in æsthetic as well as practical character, that the experience gained in one region may be all but wholly useless in another.

It is much easier, much more comfortable, much more speedy, to elaborate a scheme of treatment in the office from a topographical survey, than carefully and patiently to study every feature and suggestion which Nature presents, and then as carefully and patiently to adapt one's own features and details to hers. An added temptation to work in this way lies in the fact that the artist may sometimes persuade himself that it gives him greater freedom, permits him to be more truly creative, more original. And thus allowing himself partially to neglect the requirements of his special problem, he gradually comes to think of his drawings as independent works of art, as things to be made attractive for their own sakes. We often note the same tendency among architects. They, too, are often led astray by the ease with which a drawing may be made attractive if the stern requirements of actual construction are partially forgotten. And the result is the same in both cases. As Monsieur André says, it is almost sure to be disillusion. A building which, in the perspective drawing, has its color falsified, its effects of light and shade over-accented, its details indicated in a manner foreign to the aspect they will wear when executed, and its surroundings supplied from the draughtsman's imagination, cannot but disappoint its owner when it is transferred from paper to brick and stone. And a pleasure-ground, the lines of which are harmonious and beautiful on paper, may be just as disappointing if these lines have not been drawn with the most careful reference to every natural detail upon the special site in question.

There is no such thing—there can be no such thing—as a theoretically good design for an informal pleasure-ground; for no two sites are exactly alike, and excellence in art always consists in appropriateness—in respect for the conditions of the special problem presented to the artist. But a designer cannot help working theoretically if he transfers to his office much of that labor of contemplation, examination, imagination, and decision upon features large and small, which is involved in the establishment of his plan upon paper. Of course, this plan must eventually be drawn in the office; but it should be fixed in the artist's head while his eyes are studying Nature's preparatory, controlling scheme; and even after its main features are executed upon the soil, perpetual fresh consideration and superintendence is required if details of planting are to be satisfactorily carried out. No man's imagination is vigorous and true enough to foresee, in any large scheme, precisely what the effect of all its parts will be, or how they may necessitate modifications in the proposed arrangement of minor features and details. Perpetual study upon the spot is needful until the final touches have been given to his work. A proof of the truth of these words may be found in many of our public pleasure-grounds where the beauty of the main conception is disguised, if not deformed, by lack of taste in planting, and especially in the minor details of planting.

It is natural that, as Monsieur André notes, the habit of undue dependence upon office study should have led to the habit of considering paths and drives as the chief features of a problem; for these are the features which "make the most show" in a drawing, and the lines of which, if harmoniously disposed on paper, do most to suggest an attractive, artistic scheme. It is, however, true that they are not the most important things in the completed work. They are seen as a whole on paper, but are usually seen only bit by bit when one traverses them, and thus the careful balancing and opposition of their lines is often labor wasted even when it is not actually labor wrongfully bestowed. The main thing in the creation of a pleasure-ground is, as Monsieur André says, the creation of beautiful scenes. Paths and drives are merely the means of approach to these—devices to make their beauty accessible, and to display it well from all desirable points of view.

Nowhere could a better instance of the artistic disposition, the right relative importance, of paths and drives be found than in our Central Park. Here we think little about

them; we think only of the varying succession of beautiful prospects which they open up to us, and yet, when our attention is called to them, we realize that they are very gracefully drawn and disposed. Nevertheless, many plans look more harmonious and attractive upon paper than the plan of Central Park. Without a clearer knowledge of the conformation and the planting of its different parts than paper can convey to the average eye, one might not think it remarkable for artistic excellence. But it is artistically remarkable just because it was not elaborated with any thought of its effect on paper.

In view of the great beauty of this park, it is instructive to know that none was ever created in a less theoretical, in a more practical way—less in the office, more in the open air. The design of Messrs. Olmsted and Vaux as first drawn and accepted was very different from their design as we see it realized to-day. The former was, of course, adapted, after careful study, to the very peculiar and difficult site in view. But during the long years while the actual work progressed it was perpetually modified in deference to the minuter knowledge gained by its creators. They lived on the borders of the park and studied its face as a portrait painter studies the face of his sitter. Day by day they reconsidered and recast parts of their scheme, and day by day they reviewed and revised their proposed emendations on the site itself. Thus a great work of art was achieved, and thus only can a great work of landscape art ever be achieved—"through patiently extended experiments upon the spot itself."

These facts imply, of course, that there is great danger in attempting too much work at once. It is impossible that Central Park could have been so good had its creators been busy at the same time with similar undertakings elsewhere. The success of the Chicago Fair Grounds is another illustration in point. Mr. Olmsted's partner, Mr. Codman, lived near them for many months, devoting himself to every detail of their preparation, and also to the work of gathering and propagating the materials with which they were to be planted. And thus it must always be. An architect's design, if thoroughly studied and carefully put on paper, may be adequately carried out by some one else, in the security that no changes will be required. But a landscape-gardener's mind must be continually at work, his eye must be upon his plan, his hand must be active in its amelioration, until the last of his work upon the soil is done. And even then, as we have often pointed out before, his superintendence will be needed for many years if the eventual aspect of his pleasure-ground is to fulfill his intentions with purity and completeness.

Botanical Notes from Texas.—XXIII.

GALVESTON ISLAND is a reef lying off the Gulf coast of south-eastern Texas. The trend of the mainland gives to the island a north-easterly and a south-westerly direction. The extreme length of the island is about thirty miles, and it has a varying width of from one to three miles. Its highest elevation is about ten feet. There are depressions of its surface which are lower than the level of the Gulf, and these are filled with sea-water. The ninety-fifth meridian crosses the western portion of the island, and the twenty-ninth parallel runs a little south of it. The thermal mean for the year eighteen hundred and ninety-three was sixty-four and six-tenths degrees. The total precipitation for the same year was about forty inches. The city of Galveston is built at the extreme south-east corner of the island, and it is the principal seaport of Texas. A chief attraction of Galveston is the long stretch of nearly straight wide beach, which the heavy waves of the Gulf have pounded into the smoothness and hardness of pavement. A walk or a ride along it at any time is a source of pleasure.

About fourteen miles down the island coast is a grove of Live Oak trees, known as Lafitte's Grove, for there the noted Gulf rover, Lafitte, had his base of operations and of supplies. With the exception of this grove, it is said there are no native trees upon the island, but many species of trees of southern nativity readily grow here and are largely planted for shade

or ornament. They have upon the island an Oleander Park, and thousands of trees of that species adorn the streets and lawns of the city. Coast Cedar (*Tamarix Gallica*) is also largely planted as a street-tree, oftener in yards, and Jerusalem Thorn (*Parkinsonia aculeata*) is not uncommon in the city. Barbadoes Flower Fence (*Cæsalpinia pulcherrima*) is frequently seen, and sometimes the famous Silk-tree (*Albizia Julibrissin*), the handsomest of all our native or naturalized trees of the Pea family. For abundant and rich perfume, Huisache (*Acacia Farnesiana*) excels them all. The Silk-tree, like many other Asiatic species, as the China-tree (*Melia Azedarach*), Ailantus, Sterculia, Tallow-tree (*Stillingia sebifera*), Crape Myrtle (*Lagerstrœmia Indica*), makes itself quite at home in all the Gulf states. *Acacia filicina*, probably the most widely distributed species of that genus, has also found a home here.

A *Solanum* (*S. sisymbriifolium*), of peculiar and not unhandsome habit, but armed with sharp and cruel spines, is occasionally to be seen along the railways. It is very rare in Texas, coming up from farther south. Its congeners, *S. nigrum*, *S. Torreyi* and *S. elæagnifolium*, "Triompillo," have also immigrated to the Island City.

The Coast Evening Primrose (*Eurotia Drummondii*) now (April 11th) displays nightly its large yellow flowers to walkers on the beach. *E. linifolia*, with the smallest flowers of any of the species, is very common on the drier portions of the island. From here it extends easterly to Georgia and northward to Missouri and Kansas. Two or three other species of the genus are found within the city limits. *Tissa marina*, with small pink flowers, is common in saline soils, and several other low-growing Pinks abound. *Melilotus Indica*, very like *M. officinalis*, but less tall and with little fragrance, is common in the city.

I observed four species of Clover (*Trifolium*) on the island, *T. Carolinianum*, *T. Begariense*, *T. repens* and *T. pratense*. Blue Bonnets, as Texans call *Lupinus subcarneus*, has located here, moving over from the mainland. This plant thrives without seeming injury from salty air and salty soil. Its fleshy leaves indicate that the species originated where salt breezes could reach it. Other genera of the Pea family represented on the island by one or more species, and in sight, are *Galactia*, *Rhynchosia*, *Schrankia*, *Baptisia*, *Vicia*, *Desmanthus*, *Sesbania* and the common Yellow Locust (*Robinia*). The peculiar prostrate Crucifer, *Senebiera didyma*, is very common in Galveston. The abundant volatile oil that this plant emits is almost fetid. Its disagreeable odor, its fleshy finely cut leaves and twin pods lead to its easy recognition. It seems to thrive best when ill-treated, being commonest in well-trodden places. The species is very abundant in the coast country, and inland to Little Rock, Arkansas. *Cissus stans* grows in Galveston, and *C. incisa*; the latter species is called Marine Ivy by some florists. Two species of odd little Water-cups (*Hydrocotyle umbellata* and its cosmopolitan cousin, *H. Asiatica*) are here. A Horn Poppy (*Argemone*) displays everywhere its large white flowers to the vernal breezes. I have not seen in Texas any form of *Argemone* with yellow flowers. *Lechea tenuifolia*, *Verbena Aubletia* and *Borrchia frutescens* are abundant.

During a long stroll down the island I saw an attractive Gentianaceous plant, *Sabbatia campestris*, growing commonly on the prairie. It grows northward to Kansas. There is a form of it with white flowers, known in this state as Texas Star. A little *Bartonia*, distantly related to Texas Star, grows near it. The southern Dewberry, so common over most of the state, is here in force. The species deserves more credit for the quantity and value of the fruit that it yields than has been given it in these notes. The gathering and sale of its fruit in the month of May gives it a commercial value of some importance. A fruit-dealer in a near-by town informed me that he expected to buy this season 50,000 quarts of dewberries, all produced from wild plants. The business of gathering the fruit is largely in the hands of negroes, and it affords them an income at a time when it is appreciated.

Monanthochloa littoralis, a low, creeping, maritime grass, is common along the Gulf coast from Florida to Mexico. It bears numerous short rigid leaves and diœcious, glumeless flowers. The stems are woody at the base and not more than five to eight inches tall. *Bulbilis dactyloides* (*Buchloë dactyloides*), the well-known Buffalo Grass, is not uncommon on the island along the railways. The peculiar, handsome and not common little yellow-flowered *Sisyrinchium*, *S. Thurowi*, is quite abundant on the island within the city limits and along South Galveston Railway. During a visit to Quintana earlier in the season I found the rare little Fern ally, *Ophioglossum crotalophoroides* (*O. bulbosum*, Mx.), growing within reach of high tide.

In Austin County I happily ran across the rare and little-known *Thalictrum debile*. This low, weak-stemmed and hardly erect species appears to have been discovered by Buckley in Wilcox County, Alabama. Elihu Hall also found it in eastern Texas. I do not find to this time that any other botanist has found the plant. It was abundant when I saw it, and in fruit as well as in flower. *Aristolochia reticulata* grows in Pine-forests near Bellville, an extreme south-western station for that species.

The small southern Clover, *Trifolium Bigariense*, is very common throughout central Texas. On the black lands it forms quite an important part of the early-spring pasturage.

At Hitchcock, Alvin and at other points on the mainland near Galveston, and Houston and at other localities along the coast, quite extensive experiments are being made to test the adaptability of this region to general fruit-culture. As the tourist rides over the wide stretches of prairie about Houston, still largely a cattle country, he wonders that during nearly a half-century of statehood such a problem has not been fully settled. Texas has now a horticultural society, composed of efficient men and women, able to give reliable information about fruit-growing in this state.

Eagle Pass, Texas.

E. N. Plank.

Foreign Correspondence.

London Letter.

THE weather here is unfavorable for gardens. Cold, heavy rains are frequent, and bright sunshine is as rare now as in October. This has been so for the past six weeks, and, consequently, the outlook for agriculturists and horticulturists is not promising. Lawns certainly are brighter and trees greener than is usual at this time of year, but vegetation generally looks far too succulent to be safe. On the other hand, some plants are enjoying the extra amount of moisture; for instance, bulbous plants, which, at Kew at any rate, are flowering well. Lilliums, Tigridias, *Crocasmias*, *Gladioluses*, and *Watsonias* out-of-doors, *Hymenocallis*, *Hæmanthus*, *Griffinia* and other Cape bulbs, indoors, are better this year than usual. I propose to devote my letter this week to some of the most noteworthy of these now flowering at Kew.

CRINUM POWELLI ALBUM.—This is the best of all *Crinums* that can be grown permanently out-of-doors in the warmer parts of England, and there are few, if any, that surpass it among the eighty or more species that have been described. It takes time to reveal itself, a single bulb planted in a sheltered sunny border making an indifferent display for the first year or two. But if it is happy—and ordinary treatment satisfies it—offsets will be formed at the base and grow up into fine bulbs, until in about five years one may have such a grand specimen as is now in flower in a wall-border at Kew. Its leaves form a healthy cluster four feet through and a yard high, glossy green and pleasing in every sense, while the flower-scapes stand well above the leaves, and each bears an umbel of from five to ten snow-white flowers, each five inches across, with wide expanding, overlapping segments. It is a grand plant, a grand hybrid.

CRINUM MOOREI ALBUM.—I have already described this plant as we know it here, in vol. iii., p. 538, but it is so fine this year that it warrants further description. Our plant is in the large temperate house and is planted on the margin of one of the beds. It has a bulb as large as an ostrich egg and a long stem-like neck with broad, wide-spreading leaves two to three feet long. It bears two stout scapes two feet above the top of the neck and the flowers are six inches across, pure white, with graceful nodding tubes. They last a week or more, and as there are twelve in each umbel and they open in slow succession, the flowering season extends over six weeks or more. I have never seen this plant tried in the border outside, but I know that the type, *C. Moorei*, is hardy in the south. There is no more beautiful bulbous plant in the garden than this. It produces offsets freely.

CRINUM SCHIMPERI.—Bulbs of this very promising garden-plant have been in cultivation at Kew since 1883, when it

was introduced from Abyssinia and distributed by Herr Max Leichtlin under the name of *C. Abyssinicum*. It was again distributed in 1889 from the Berlin Botanic Garden under its proper name, and a figure of it (a poor one) published in Regel's *Gartenflora*, t. 1309. Both the Berlin and Baden-Baden bulbs have flowered this year in an unheated frame at Kew. They have semi-erect subdistichous glaucous leaves two feet long, and a cylindrical scape eighteen inches high, bearing an umbel of six pure white flowers as large as those of *C. longifolium* (Capense) and very fragrant. The Kew plants were at first grown in pots in a warm house, but this treatment did not suit them. They have been planted out for the last three years against a wall in an unheated frame, from which frost is excluded in winter. *C. Abyssinicum* is a good distinct species not yet in cultivation.

HIPPEASTRUM BRACHYANDRUM.—This is a rare bulbous plant, but it is likely to become as common as any, as it is easily grown, seeds freely, flowers in two years from seeds, may be grown all summer in the open border and bears large, handsome trumpet-shaped flowers of attractive colors. It has only been known in cultivation four years, Kew obtaining a single bulb of it from Mr. Bartholomew, of Reading, who introduced it from south Brazil and first flowered it in 1890. Now we have it flowering in pots in the cool greenhouse and in a bed out-of-doors, besides a frame full of seedlings. This is what Mr. Baker says of it, that it has much the largest flower of all the *Habranthus* section of the genus, and the color is very beautiful, beginning as a pale pink, like that of *Amaryllis blanda* and ending as a deep blackish-red at the base of the segments. It has bulbs and leaves like those of *Nerine* and an erect scape a foot long, bearing a single erect flower as large as a *Belladonna Lily*.

GLADIOLUS PLATYPHYLLUS.—This is a remarkable species, if not a very attractive one. At Kew its leaves are fully three inches wide and eighteen inches long, while the spike, which is as thick as a man's finger, reaches to a height of four and a half feet. The flowers differ from those of *G. dracocephalus* in being darker and in having some blotches of purple about the base of the segments. They also differ in their arrangement on the spike, the tubes curving inward, so that the flowers are crossed over each other obliquely in front. There is another *Gladiolus*, now flowering at Kew for the first time, which is like *G. dracocephalus* in every way except that the flowers are almost olive-green, closely grained and lined with claret-purple. These dull-colored "Sword Lilies" are worth a place in the garden of those cultivators whose tastes are highly "correct."

HÆMANTHUS CARNEUS.—This deserves to be added to the list of meritorious garden *Hæmanthus* which I sent you a few weeks ago. It is the best of the section *Melicho*, characterized by thick bifarious bulb-tunics, thick, fleshy leaves and spreading flowers and spathe valves. There are several well-marked varieties of it in cultivation at Kew, and they are now in flower in the Cape-house. The scapes are about a foot long, erect, compressed, pinkish and mottled, covered with soft hairs and bearing a globose head three or four inches through, formed of numerous soft pink flowers in the type, white in the variety *alba*. Another variety is remarkable for the deep shade of pink of its flowers. The plant thrives in a cool sunny greenhouse, and it flowers every year, the flowers lasting about a month. The species was first introduced to Kew by Masson, the Kew collector, exactly a century ago.

LYCORIS AUREA.—This handsome Chinese bulbous plant is scarcely known in English gardens, and the few who have made its acquaintance have learned to dislike it because it behaves so badly under cultivation. It is a native of China and Formosa, and is cultivated in Japan under the name of *Nerine aurea*. When at its best it is an attractive plant with stout *Nerine*-like foliage, a terete scape from a foot to two feet in length and an umbellate inflorescence, formed of bright yellow flowers three inches long, with curved crisped segments half an inch wide and decli-

nate anthers. Here we treat it as a cold-greenhouse or frame bulb, and it does badly. I now learn from a friend in Hong Kong that it grows well and flowers freely in the gardens there, resting through the hot season in spite of excessive moisture, and pushing into growth and flower in winter. He sends bulbs of it as large as Emperor Daffodils, and recommends me to grow them in the stove.

LILIAM BROWNI, var. LEUCANTHUM.—This is a new and distinct Lily which was introduced from Yun-nan to Kew along with *L. Henryi* and another variety of *L. Brownei* named *chloraster* by Mr. Baker. The type is well known in gardens, and is one of the handsomest of the longiflorum section of the genus. The variety *chloraster* differs mainly from it in having the segments colored green along the midrib inside; in other respects it is *L. Brownei*, but a stronger grower, the stems being five feet high, and it does well under ordinary treatment. The new variety differs from all the forms of *L. Brownei* in its short broadly lanceolate leaves, the width of its segments, their scarcely reflexed apex, the wide, almost campanulate form of the corolla, and in being milk-white outside and sulphur-yellow inside. The anthers are only one-third of an inch long. I consider this one of the best of the eastern Lilies. At present it is known only at Kew.

LILIUMS FROM SEEDS.—Many species of *Lilium* are short-lived under cultivation, whatever may be their behavior in a wild state. To keep up the supply I would recommend all Lily-fanciers to look after the seeds and to sow some every year of those species which flower well for a year or two and then fail. The process is simple enough, all that is necessary being to insure the setting of a few fruits on the healthiest plants and to sow the seeds as soon as they are ripe in a pan or box of sandy soil, which should be placed in a frame. When the seedlings have made one leaf, prick them out in a cold frame or bed, and transplant annually, but do not let the bulbs get dry. In this way we have secured large stocks of such *Liliums* as *L. Henryi*, *L. Formosanum*, *L. sulphureum*, *L. Nepalense*, *L. superbum* and others.

London.

W. Watson.

Entomological.

The San José Scale.

EARLY in 1894 the United States Department of Agriculture issued a special bulletin announcing the appearance of this pest in the eastern United States, and suggesting that New Jersey nurseries were to some extent responsible for its dissemination. A very complete study of affairs in New Jersey proves that this charge is, in part at least, well founded, and that, unfortunately, a large number of fruit-trees infested by the scale have been distributed.

It is matter for profound regret that this has happened, and it emphasizes a source of danger that is too little considered—that is, the nursery as a factor in the distribution of injurious insects and plant-diseases.

However, it is not to the nurseries, but to another source of danger, that I now wish to call attention. California fruit is coming into market in immense quantities and of very attractive appearance, and many of the pears are infested by this San José or Pernicious Scale, *Aspidiotus perniciosus*. The accompanying figure, drawn from nature for the United States Department of Agriculture, illustrates an infested fruit. It is rare that an example quite so badly infested is found on the stands, but many are not much better, and a very large proportion show a small number. I have been through the markets of Philadelphia, New York and Brooklyn, and through the main streets on which fruit-stands are most abundant and have found infested pears everywhere.

On August 15th, at the meeting of the Association of Economic Entomologists, this insect was discussed, and, to show this point, I purchased six pears from the nearest fruit stand, and all of them were infested by the scale.

They were passed around, and it was found that both male and female scales occurred on the fruit; that many of the females were full grown, and that in two cases the little yellow larvæ were crawling on the surface of the fruit. Here we have exactly the conditions which favor introduction of this insect, for, if the pear be peeled and the skin thrown anywhere near a fruit-tree of any kind, there is nothing to prevent the establishment of a colony. California fruit is sold on all trains, or often purchased at stations, and parings are thrown out of the window. While in most cases the scales perish, yet, as they are enabled to subsist on the Blackberry, the Raspberry, the Rose and other plants of this botanical family, there is a very serious margin of danger from infested fruit. I do not wish to exaggerate this danger, and the general public will not be inclined to listen to or heed warnings; but no one with a garden in which he grows fruit or berries should bring into it any California fruit, especially pears, unless assured from careful examination that no scales are present on it. The scales are easily recognizable as small, round, gray spots, surrounded by a bright red discoloration of the fruit.



Fig. 55.—San José Scale.

a. Pear, moderately infested—natural size. b. Female scale—enlarged.

No danger is to be apprehended from eating the pear unpeeled and swallowing scales or insects. This is, indeed, a safe way of overcoming any danger of spreading the pest.

Rutgers College.

John B. Smith.

New or Little-known Plants.

Spiraea longigemma.

THIS species, which in habit and arrangement of the flowers, resembles in a general way some forms of *Spiraea japonica*, differs from all the species of the genus now known in its elongated lanceolate acute leaf-buds. In cultivation it is a shrub three or four feet high, with slender terete bright red-brown branchlets, marked with numerous minute lenticels, and glabrous buds of the same color, and often a quarter of an inch long. The leaves are oblong-lanceolate, acuminate, coarsely and doubly serrate, with sharp gland-tipped teeth, penniveined with about four pairs of remote primary veins connected by coarse reticulate veinlets, membranaceous, light yellow-green and pilose on the upper surface, pale blue green on the lower surface, an inch and a half to two inches long and half an inch broad, and

are borne on slender, slightly grooved red pilose petioles a quarter of an inch in length. The flowers are perfect, and are produced in compound villose-pubescent corymbs terminal on leafy branches of the year and furnished with subulate foliaceous bracts; they are borne on slender pedicels varying from one-eighth to one-half of an inch in length and bibracteolate at the apex. The calyx is dark green and puberulous, with deltoid acute entire divisions about half as long as the rotund pure white petals. The stamens are inserted on the incurved margin of the purple crenate disk, and are two or three times as long as the petals. The carpels are broadly ovoid, divergent, exserted,

Plant Notes.

HIBISCUS MOSCHEUTOS.—This Swamp Rose Mallow is the most common species of the genus in this part of the United States, and is a familiar plant beside our larger rivers, and more particularly in salt-marshes along the coast. It is sometimes called the Wild Hollyhock, which is a fairly good name for it, because its flowers resemble those of a single Hollyhock in shape and appearance and the plants are not dissimilar in form. The broad, numerous leaves, smooth above and hoary beneath, contrast prettily with the showy flowers, which are rose-colored at first and then



Fig. 56.—*Spiraea longigemina*.—See page 244.

and pilose except at the apex, and are crowned with slender terminal persistent styles.

Spiraea longigemina was discovered on the high mountains of the province of Kansu, in north-eastern China, by the distinguished Russian traveler, Przewalski, and was first described by Maximowicz in 1879.* Later it was found in the southern part of the same province by Piasezki. It was sent to the Arnold Arboretum in 1892 from the Forest School at Munden and flowered here for the first time in June, 1893.

C. S. S.

* *Act. Hort. Petrop.*, vi., 205.—Forbes & Hemslay, *Jour. Linn. Soc.*, xxiii., 226.
—Zarbel, *Die Struchigen Spiraea der Deutschen Gärten*, 57.

change to a paler tint. Plants with pure white flowers are not rare. Like many other species which are naturally found in low swampy ground, this Rose Mallow does well when grown in ordinary gardens, and in rich soil it reaches a height of six feet or more. After all, like certain others of our wild flowers, it never shows to quite as good advantage as it does in its native habitat. Just now the Hackensack meadows are gay with these flowers, which are singularly beautiful in the tall grass which surrounds them. Persons seeing these flowers from the car-windows of one of the many railroads which cross these meadows often mistake them for large wild Roses, an error

which testifies to the singular purity and beauty of their color.

SWAINSONIA GALEGIFOLIA.—This Australian plant is by no means new, but it has been much neglected, in this country at least, until within a few years a white-flowered variety of it has been grown to a considerable extent for florists' use. It is well adapted for cutting, for it is almost a constant bloomer, and when the flower-spikes or the extremities of the branches are cut off, it at once throws out new shoots from below. It is of a half-scandent habit, and therefore is better with some support, and it does very well in a conservatory when trained against a wall. When well grown, the spikes of white pea-shaped flowers are three or four inches long, and a branch containing three or four of these spikes rising above the glaucous-green delicate compound leaves is very attractive. It does not seem generally known that this shrub is an excellent border plant. A plant set out in the open ground as soon as the weather becomes warm in late spring will grow rapidly, and if kept back by cutting it will become a broad and stocky plant, producing numerous flowers until frost.

LIATRIS PYNOSTACHYA.—It is hard to say which of the species of *Liatris* is the most beautiful at this season of the year, and we have selected this one simply because a vase filled with its long dense spikes of rose-purple flowers in the exhibit of Pitcher & Manda at the Florists' Convention, at Atlantic City, last week, seemed to be particularly attractive. There are many other species of these Blazing Stars, or Gay Feathers, as they are sometimes called, with long spicate or racemed heads of purple flowers, which bloom in early autumn and late summer. *L. scariosa*, which sometimes reaches a height of five feet, is very handsome, having larger heads than the first-named species and bright reddish scales. *L. spicata* begins to flower earlier in the season, and there are others, like *L. graminifolia*, *L. elegans*, and even the little *L. cylindracea*, which are worth growing. One objection to the *Liatris* is that the flowering begins at the extremity of the spike and progresses downward, so that while the lower portion of the spike is in bloom the upper portion may be dry and withered. Nevertheless, they are for the most part showy species, and deserve a place in any considerable collection of hardy perennial plants.

QUERCUS PALUSTRIS.—We generally think of the Oak as the emblem of rugged strength, but none of our native forest-trees excel in grace of outline the Pin Oak, which is so common near this city. This is especially true of this species before it reaches its full size. The lower branches, which droop gracefully in a young tree, seem in an old one to be thrust downward in a rigid, disagreeable way, and such trees are often disfigured by dead branches in the interior of the head. Perhaps a course of systematic pruning, begun when the tree is young and carried on so as to give it a more open habit when it became old, might remedy this difficulty. The White Oak hardly attains its full measure of dignity until it is a hundred years old, and it becomes more impressive and venerable for a century or two longer. This means that we should not plant Pin Oaks to be rivals of White Oaks in the twenty-first century, but they are beautiful trees always, and we can plant them without any fear of outliving their attractiveness. Their clean glossy foliage and the long slender sprays at the extremities of the branches give them an expression of feathery lightness which is worn by no other Oak. For street-planting this is one of our most useful trees. We have often alluded to the famous avenue of Pin Oaks in Flushing, and it is to be hoped that the double row of these trees which extends up Pennsylvania Avenue, in Washington, from the Potomac, may yet be continued to the national Capitol. Some of the Oaks have a reputation for resenting removal, but a Pin Oak can be transplanted with perfect safety, since it differs from many others in having a mass of fibrous roots when young, instead of a few prong-like roots.

Cultural Department.

Basket Ferns.

HANGING baskets of Ferns are very ornamental, and there are many species and varieties suitable for this purpose, and many that need to be suspended in order to show to the fullest advantage the grace of their drooping foliage. The baskets may be of wood or wire, the former being preferable, and a compost of fibrous loam, leaf-mold, peat and coarse sand is suitable, and it should be kept as coarse as possible. The baskets must be lined with moss to keep the soil from falling through, and the moss should be carried well up to the edge of the basket, leaving it about an inch higher than the soil, so as to form a receptacle for the water. It is a great mistake to fill the basket too full of compost, as the water then runs off instead of through it.

Of the *Adiantums*, perhaps the two most suitable are *A. amabile* and *A. assimile*; their creeping rhizomes soon find their way through the crevices and over the entire surface of the basket and envelop it in a mass of tender green foliage. *A. dolabriforme* and *A. ciliatum* are also very suitable, producing young plants at the points of their pendent fronds, which greatly enhance their beauty. The last-named somewhat resembles *A. candidum*, which is also a very suitable variety, but the fronds are larger and more deeply cut and fringed.

Asplenium flabellifolium, *A. macrophyllum* and *A. Longisium* are all good for this work. Among the *Davallias* quite a number are admirably adapted for baskets, and also for hanging on blocks of wood or cork. The pretty little *D. bulbata*, or Squirrel's-foot Fern, *D. dissecta*, *D. repens* and *D. Tyermania* are specially adapted for small baskets. The fronds of none of these varieties attain a length of more than a foot, while *D. solida*, *D. elegans polydactyla* and *D. Mooreana* are among the best for large baskets. But among all the species of Ferns there is none quite as desirable for large baskets as the *Goniophlebiums*. *G. chnoodes* has beautiful soft pendent fronds, often measuring four feet in length, and *G. subauriculatum*, often attaining a length of ten feet. *Nephrolepis davallioides furcans*, with its large arching fronds of robust growth, makes a noble basket-plant. The distinct and beautiful *N. Duffii*, with its close tufted habit of growth and peculiar character, also serves this purpose well, while *N. exaltata* and *N. pectinata* are first-rate for this work. *Pillæa ternifolia*, a lovely basket species, has elegant pendent fronds about a foot in length. *Platyloma flexuosa*, with fronds of the same length, is also good.

Peteris scaberula makes a fine little basket-plant, while *Woodwardia radicans* makes a noble specimen for a large basket.

Plants of the *Platynerium*, or Stag-horn Fern, make beautiful objects for hanging on blocks of wood or cork. They grow better and show the peculiar form of their fronds to greater advantage this way than any other in which they can be grown. There are several well-marked varieties, the commoner being *P. grande* and *P. alicorne*. The former has both upright and drooping fronds, while the latter is entirely upright. Among the rarer kinds are *P. Wallichii*, with broadly cut rounded fronds, *P. biforme* and *P. Willinckii*, with narrower cut fronds, and quite distinct in having the tips of its fronds turned upward.

Tarrytown, N. Y.

William Scott.

Hardy Perennials.

PLANTS which start into growth as soon as the ground warms in spring must make all preparations for this during the previous autumn, and, therefore, there are very many hardy herbaceous perennials, which, if properly cared for, can be transplanted now to better advantage than at any other season. If we look at the roots of early *Anemones*, *Violas*, *Trilliums*, etc., just before the ground freezes up for winter, we will see that the flower-buds are all well formed and ready to break into growth as soon as the snow is off the next spring, so that it is much better to set the plants early, that they may have time to make their autumnal growth without disturbance. It is much better to lift them as early as the middle of August than to defer this till just before winter, when the fibrous roots, many of which must necessarily be broken, will not have time to recover before they are frost-bound. Of course, in a very dry season like this the ground should be artificially watered at the time of transplanting, so that the plant will have some food to start off with. *Pæonies* and other coarse-growing plants which have exhausted their soil can

now be divided to advantage, and the roots of the hardy herbaceous Poppies can now be cut up for propagating new stock.

Good growers always recommend the early planting of Lily-bulbs, and Mr. Horsford has asserted in these columns that he prefers to winter them in a cool cellar rather than to set them late. When they are planted early a new growth of fibrous roots is made, and they are thus prepared for an earlier and more vigorous start in the spring. Like many other plants, Lilies are exhausted by bearing seeds, and plants of *Lilium Canadense* taken up while in flower and replanted are sure to give better flowers the next year than if they had been left to go to seed where they originally stood. Of course, it is a good plan not to allow Lilies to ripen seed; the bulbs will be stronger for it.

Of course, it is desirable to get a supply of spring-flowering bulbs as early as possible, and to get them in the ground before the approach of cold weather. When they are planted late they may flower fairly well the first year, but the following season will show the bad results of delay. They may flower well for once, because the food already stored up in the bulb is used to produce flowers and seed, but unless they have made a good root-growth the year before they have not the power to elaborate and store up material for another year, and will often die or be found diseased if they are examined after the foliage is ripened. In warm places where the plants can make roots all winter this early planting is not so essential, but wherever the earth freezes hard and remains so all winter it is necessary to the continued health of the plant that the bulb should be set in the ground sufficiently early in the autumn to make a good root-growth before severe frosts.

Montclair, N. J.

B.

Flowering Annuals.

AT this season there is no lack of color in our gardens where a proper use has been made of these plants. The Dwarf Sunflowers, Nasturtiums, China Asters, Marigolds, Coreopsis and many others are very useful when quantities of flowers are needed. *Delphinium consolida* is still very beautiful, with its long racemes of intense blue flowers, which continue to show themselves in spite of drought. The many beautiful forms of the perennial Larkspurs have pushed this plant aside somewhat, but it deserves a place in every collection of annual flowers. Of course, there are many varieties, double and single, and the colors range through various shades of blue and white and pink, but none are more beautiful than those of a clear deep blue. The China Asters have been changed by selection and crossing till the plants differ as widely in habit as they do in the color and shape of the flowers. One can hardly go amiss in selecting from the approved strains of the best florists whether plants are wanted for bedding or for cutting. As the nights begin to grow cool the single-flowered Dahlias, and especially the dwarf kinds, are beginning to do their best. They come in almost all colors and combinations of colors, and form broad plants hardly more than eighteen inches high, so that they need no stakes, and produce flowers in the greatest profusion.

The practice of sowing the seeds of the hardier annuals in autumn is one to be altogether commended. Those which bloom only once will flower earlier, and with much greater vigor, while those which continue to bloom for a long time, develop into a size which spring-sown seedlings never attain. A plant of *Coreopsis Drummondii*, for example, will have stems an inch through and cover a space a yard across.

Jamaica, L. I.

M. Arnot.

In the Shrubbery.—Shrubberies in general have fewer attractions now than at any other season. The time has hardly come for the turning of the leaves, although some of the flowering Currants are already brilliant; and, again, the best season for the great body of those which have showy fruit has not yet arrived, although some of the forms of *Pyrus baccata*, with their arching branches loaded with miniature apples of the brightest color, are already singularly beautiful. But shrubs in flower are rather rare, and this gives an especial value to those which flower in late August and early September. It is singular that the Heaths of the Old World are not more generally used here, for, if properly cared for in soils which are not of a clayey texture and contain no limestone, they give comparatively little trouble. The common Heath, *Caluna vulgaris*, is, perhaps, the best for beginners, as it is the most vigorous and has various forms—some with white flowers, some with flowers darker-colored than the type, some with double flowers, and many others of peculiar form—prostrate or erect. The Cornish Heath, *Erica vagans*, is

rather more difficult to deal with; so is the four-leaved Heath, *E. tetralix*. St. Daboec's Heath, *Daboecia polifolia*, bears large, dark-colored purple flowers often half an inch long. It is a spreading plant, and the racemes of flowers are borne on long stems above the shining evergreen leaves. It produces flowers for a long time, but most profusely in late summer, when flowers on woody plants are needed, and it is an admirable species for a rockery. Another plant of the Heath family is the Sorrel-tree, *Oxydendrum arboreum*, which now bears long one-sided panicles or drooping racemes of pure white bell-shaped flowers, a quarter of an inch long. Among other shrubs the Hypericums are, perhaps, the most interesting at this season. You have already given pretty full accounts of the different species, but they are all useful. They are of varied habit, from erect to prostrate. They flower for a long time when few other shrubs are in bloom. The foliage is neat and clean, and they fill a place which no other genus occupies. No doubt, many of the spring-flowering shrubs which have ripened up their wood early on account of the drought will give a second crop of blossoms with the first autumn rains.

Hartford, Conn.

J. Stanton.

Henderson's Bush Lima Bean.—Three distinct forms of Bush Limas have now been sufficiently long before the public to enable ordinary growers to form a conclusion as to their comparative merits, and I, for one, have decided that Henderson's, taken all in all, is the best. It leads both Burpee's and Dreer's (*Kumerles*) in time of maturing. Its productiveness is remarkable, and far exceeds that of its rivals, while its habit of persistent bearing is unequalled. The plants are smaller than those of any other variety, and they can, therefore, be set more closely. It is less liable to sport into the climbing or running habit, and is more uniform in its bush habit than the others, while it is quite as hardy and vigorous as either. In fact, it excels in every point but one, and that is that its flavor is not quite as rich, and yet the difference in this respect is so trifling that it hardly weighs against its manifest advantages in other respects.

Montclair, N. J.

Beefield.

Meetings of Societies.

American Forestry Association.

A SUMMER MEETING of the American Forestry Association, held in conjunction with the session of the American Association for the Advancement of Science, began on Tuesday evening, August 21st, in Brooklyn, New York, with an illustrated lecture on the Battle of the Forest, by B. E. Fernow. Sessions were held in the morning and afternoon of Wednesday, in which several important papers were read and discussed. Mr. Fernow, in an address on the condition of our public timber-lands and forest-reservations, called attention to the necessity of following up the policy of reserving forest-lands, which was inaugurated through the efforts of the American Forestry Association, with measures for their protection and rational use. As the law now stands, the Secretary of the Interior cannot sell timber, but he can give it away. He must refuse the offers of lumbermen to buy timber because he is not empowered to take the money, and there is no adequate check on cutting timber on Government lands. The sentiment of the population near the reservations, which was once favorable to them, is now setting against them, because there are no means for utilizing their products.

At the close of this address Mr. Fernow offered the following resolution, which, after some discussion, was unanimously adopted:

Resolved, That the American Forestry Association desires to express again, emphatically, its approval of the efforts of the Public Lands Committee of the House of Representatives, and its chairman, the Hon. Thomas C. McRae, for the enactment of a law, providing not only for the care and protection, but also for the rational use, of the timber and other resources in the forest-reservations and on all public timber-lands. The policy of reserving can hardly be considered an advantage to the forestry interests unless followed up by an intelligent and efficient administration of the reservations.

This association emphatically denies that it advocates in the policy of forest-reservations the unintelligent exclusion from use of large territories and the resources contained therein,

but, on the contrary, it reiterates that it conceives the reservations made for the purpose of their rational use under restrictions and control apart from private interests in expectation of possible occupancy. If uncared for by the rightful owner, the Government, the door is opened to greater destruction and depredation than before. We, therefore, desire to impress upon our Representatives in Congress the immediate necessity of making provisions for the better care of the public timber and other resources, as urged heretofore by this association.

We give below portions of two papers read on this occasion, and we shall continue the report in next week's issue.

THE RELATIONS OF INSECTS AND BIRDS TO PRESENT FOREST-CONDITIONS.

A paper on this subject was read by A. D. Hopkins, Entomologist of the West Virginia Experiment Station, from which we have taken the following extracts:

Forests under natural conditions, or, in other words, those unaffected by the advent of civilization, appear to be under the control of certain laws of nature, which govern the vegetable and animal species therein in such a manner that a harmonious balance is usually preserved. No species of the vegetable kingdom is allowed to suffer severely from the undue increase of its enemies in the animal kingdom. Few, if any, species of the animal kingdom become extinct on account of the failure of their food, or from the attack of their natural enemies. A continued battle of the species exists, but it is a war in which none are conquered, and none are conquerors; each species fighting for its existence makes possible the existence of some other species, and thus a balance is preserved.

This may be the rule under natural conditions, and all may go well until the unnatural conditions following the advent of civilization bring about a change. Then nature's laws are broken, obscure species of insects and plants come to the front; others which were formerly abundant disappear. In the confusion certain enemies of plants are for a time exempt from the attack of their enemies, and are left free to commit ravages upon some species of vegetation; others, from a lack of a sufficient supply of their natural food, change their habits and infest plants of an entirely different character, and thus escape for a time their enemies, which had previously kept them within proper bounds; others are introduced from foreign countries, and their enemies have been left behind. They invade our forests unmolested, except by man, until some of their old enemies are introduced, or they acquire new ones here.

When the process of clearing the land commences, new conditions are presented to the forest-insects which are most favorable to their increase. The girdled trees in clearings, the logs, stumps and tops, and the injuries to standing timber by fire, all contribute to their multiplication, some of them changing their habits from that of infesting diseased and dead timber to that of attacking the living, and through their power in numbers they are enabled to kill trees on their own account.

Some ten years ago, when the West Virginia Central and Pittsburgh Railroad was being built through a portion of the Spruce-forests in our state, the timber along the line commenced to die from the attack of insects, and the trouble continued to increase and spread during the next three years until thousands of acres of the finest timber in this state was killed. Only four years ago an invasion of the destructive pine-bark beetle, starting somewhere near the line between West Virginia and Virginia, in Rockingham or Hampshire counties, spread like a conflagration over these two states and adjoining states wherever the Pine grew. The Pine timber on hundreds of square miles was killed, causing a loss of property having a value of more than a million and a half dollars. Similar devastations have taken place in Maine, New York and New Brunswick, and in the forests of Germany and France. Most, if not all, of these destructive invasions were occasioned by unnatural conditions brought about through the influence of man.

Never was there a better time to study the intimate relations of forest-tree insects to certain forest-conditions. Neither can there be a better time to obtain knowledge of the characters and habits of forest-tree insects, with a view of utilizing this knowledge in the future system of forest-management, which must necessarily follow this age of forest-destruction.

Few persons realize the importance of this line of research and the benefits it is possible to derive from a more complete knowledge of the subject. The benefits to be derived from cutting timber at certain times of the year to prevent the at-

tack of destructive wood-infesting insects; the saving of the valuable timber by removing the bark from logs at certain times in the year to protect the wood from insect injuries; the possibilities to be derived from the introduction from other countries of parasitic and predacious species to keep in check our most destructive kinds; the advantage to be gained from a better knowledge of the favorable and unfavorable conditions for the existence of insect pests and of nature's laws in the control of her species—these are examples of some of the lines of work which are worthy of a life-time devotion of many specialists.

With reference to the relation of birds to certain forest conditions, I realize that I will be trespassing upon a sacred faith among our people, that birds are great friends as insect destroyers, when I say that, from my own observations, they have very little, if any, ultimately beneficial influences in the prevention of insect depredations in our forests, however useful they may be against other insects. That insectivorous birds obtain the larger share of their food from the insect world, and that they devour immense numbers of insects and other small forms of animal life, no one can doubt. They are not, however, our friends to the extent that they will devour those only which we look upon as injurious. In truth, they make no choice between those which are beneficial and those which are injurious. They capture alike the parasites of the injurious species, the parasite of the parasite, as well as the injurious species. They merely take the food nature has provided from the ranks of the insect armies of opposing forces, and neither one force or the other thereby gains an advantage. The birds merely fulfill their mission in the economies of nature by exerting their influence in the mutual struggle for existence of animal and vegetable species.

Woodpeckers, which are generally recognized as exercising the greatest benefit to mankind in the destruction of wood-infesting insects, are not so useful as we have been led to suppose. This fact was brought home to me while making investigations with reference to beneficial forest-tree insects in Germany in 1892, where I was seeking for an enemy to introduce against our destructive bark beetles. I determined that a certain species of Clerid beetle was by far the greatest enemy of European bark beetles, and was successful in finding a forest in which they were common. I was surprised, however, to find that the woodpeckers were the greatest enemy of the Clerid. The larvæ, pupæ and adults of this helpful insect had occurred in great numbers in the bark of small Pine-trees that had been broken by snow the previous winter. They had destroyed most of the bark beetles which had infested these trees, and had gone into the outer bark near the base of the tree to make their cocoons in which to pass the winter. It was in those trees only which had escaped the attack of woodpeckers that I succeeded in obtaining specimens. In some places not one infested tree in twenty had escaped the birds, and in those which they had attacked apparently not one Clerid in one hundred had escaped them. This observation led to subsequent investigation of the habits of woodpeckers, and it has been determined that they do not peck holes in the bark of healthy-growing trees (a common habit with some species) to obtain insects, but for the purpose of securing the inner bark and sap for food. I have seen trees that had died on account of the quantity of bark that had thus been removed. I have recently discovered that an injury to the outer sapwood, caused by them while thus engaged, results in a common and quite serious defect in the wood of different kinds of trees. I have also determined that what is known as curly poplar, a curled and wavy condition occurring in the wood of Tulip-trees, is the result of the punctures in the bark made by these birds.

ECONOMIES IN RAILWAY-TIES.

In a most instructive paper on this subject Mr. E. E. Russell Tratman, of the *Engineering News*, stated that an average of one hundred railroad-ties is obtained from an acre of forest, so that twenty-six and a half acres must be cleared to supply 2,640 ties, the number necessary for one mile of new track. To this should be added three and a half acres for ties for renewal for each mile of road. To insure a permanent supply at this rate of consumption there should be maintained 113 acres of growing timber to each mile of track. The total length of railroad tracks in the United States is about 230,000 miles, and with an average of 2,500 ties per mile, 575,000,000 ties are in use, while 75,000,000 to 90,000,000 of ties are annually used for construction and for renewals. For ties and sawed timber for bridges and trestles 500,000,000 cubic feet of round timber are used. This is exclusive of timber used for telegraph-poles, station-buildings, fences, cars and other railroad uses. This consumption represents but a part of the total annual timber-crop and reduction of timber resources due to reckless and

wasteful lumbering methods, to the illegal cutting of timber on Government and private lands, and to destruction by forest-fires. The prompt adoption and firm enforcement of a forestry policy by the Government was strongly urged by Mr. Tratman.

Economy in the use of railroad-ties may be effected (1) by care in the selection and use of new ties. The average cost of renewals of ties on many roads already exceeds that of rail renewals, and is still increasing. (2) By care in the renewal of ties. (3) By preservative treatment. On the Southern Pacific Railroad, which has tie-preserving works of its own, the number of renewals per mile decreased from 243 in 1891 to 240 in 1892 and 205 in 1893, while the requisitions for 1894 amounted only to 145 ties per mile. (4) By protection by metal tie-plates. These tie-plates, although as yet in moderate use, have been found on a line with heavy traffic and with many sharp curves to effect an economy in maintenance expenses of fifty per cent. in ties and seventy-five per cent in labor. Economy in the use of ties in the ways noted results in economy in other directions. First, by increasing the life of the ties the number to be purchased for maintenance is reduced. Second, it enables cheaper and inferior woods to be made longer-lived and practically equal to the ordinarily more expensive and better timber. Third, the maintenance work on the track is reduced, not only by reducing the number of ties to be renewed, but also by lessening the disturbance of the track which such renewals involves. Fourth, the more permanent condition and surface of the track are conducive to greater hauling capacity of the engines and better riding of the cars. In France, for instance, the annual consumption of ties per mile of single track was reduced steadily from 170 ties in 1883 to 84 ties per mile in 1888, due to increased care in selection, improved methods of renewals, the use of the creosoting process and the introduction of better fastenings, better ballast and heavier rails. (5) By substitution of metal for wooden ties. The mileage of track with metal ties in this country is increasing more rapidly than the mileage of new railways, and the manufacture of steel ties may become as important an industry here as it already is in other countries.

Mr. Tratman, who has given long study to the subject of economy in the consumption of timber for railway purposes, and who has already contributed several reports on the subject to the Forestry Division in Washington, concludes that care and economy exercised in regard to railway-ties result in a direct and appreciable financial economy in expenses for track-work and operation.

The Society of American Florists.

THE Society of American Florists held its tenth annual convention at Atlantic City, last week, and elected Edwin Lonsdale, of Philadelphia, President for the ensuing year; William J. Stewart, of Boston, was again chosen Secretary, and H. H. Beatty, of Oil City, Pennsylvania, Treasurer. One point in the address of the retiring President, Mr. Anthony, was a suggestion that the growers of this country might produce new varieties of Roses with the same success that has crowned their efforts to produce new Carnations and Chrysanthemums suitable to American conditions. No doubt, President Anthony is aware that there are now many workers in this field, and that America has already produced some admirable hybrids of *Rosa Wichuriana*, *R. multiflora* and *R. rugosa*. It is true that few Teas, Hybrid Teas or Hybrid Perpetuals have been produced here, but in California there are many experiments to that end now in progress under exceptionally promising conditions of climate. Another recommendation of Mr. Anthony which caused considerable discussion, and which certainly merits attention, was a proposal to establish an examining board whose duty it shall be to grant certificates of proficiency in various branches of floriculture to young persons who should make application for examination. The President suggested that the inquiry should be as diversified as the florist's work, and that there should be separate examination for such specialties as Rose-culture, Orchid-growing, etc. It was argued that in the absence of horticultural schools these certificates would be in the nature of diplomas and would prove advantageous to the working florist, inasmuch as they would set forth with some distinctness the lines in which he was most capable, and they would also relieve employers who wish worthy men and are willing to pay fair wages. Many of the members considered the project impracticable, while others were willing to try the plan, with the impression that if the examining board was composed of capable and impartial men who would award certificates

after the most careful consideration some good might be accomplished.

We have only space now for the subjects of the essays read: The first one, by William H. Taplin, of Holmesburg, Pennsylvania, set forth the need of systematic work, organization and education in order to elevate and improve the business of floriculture; Mr. S. P. Matthews, of Boston, Massachusetts, presented a paper on "Comparative Colors in Relation to Flowers," which he illustrated by the use of colored papers and diagrams; Mr. John N. Taylor, of Bayside, New York, described the varieties of Roses which best met the present demands, and discussed the best methods of growing them; Mr. John T. Temple, of Davenport, Iowa, treated the subject of Cannas; Mr. Grove P. Rawson, of Elmira, New York, delivered an extempore address on the "Evolution of the Chrysanthemum," which was voted one of the most brilliant features of the meeting; Mr. William Tricker read an elaborate address on Aquatics, in which he carefully traced the history of the cultivation of these plants in the United States; Mr. Andrew Washburn, of Bloomington, Illinois, read a paper on Successful Violet-culture, while "Fertilizers and their Application" was a subject treated with great care by Robert Simpson, of Cromwell, Connecticut. Many of the papers were of first-rate merit, and we hope to give instructive extracts from them in future numbers.

In connection with the meetings there was an interesting exhibition of flowers and plants and florists' supplies. No doubt, the feature which attracted most attention was the general collection of aquatics displayed by William Tricker & Co. in a large tank on the floor. Especially well-colored flowers of *Nelumbium speciosum*, one of them on a stalk eight feet long, were shown with clean leaves, the largest of which was forty-two inches in diameter. There were about thirty *Nymphæas*, including night-bloomers like *N. Devonensis*, *N. rubro-rosea*, a fine flower of *N. Sturtevantii*, nearly a foot in diameter; *N. dentata* and *N. Smithiana*, a new hybrid, sulphur-colored within and pale blush on the outside of the petals, *N. delicatissima* and *N. Deaniana*. Among the day-bloomers were Marliac's hybrid, *Chromatella*, the peach-pink Trickeri, many forms of *Nymphæa odorata*, including sulphurea, alba, rosea and carnea; *N. Laydeckeri rosea*; *N. tuberosa*, with its pink form; varieties of *N. Zanzibarensis* of excellent form and deep color; *N. cerulea*, *N. gracilis* and its blue form, *N. alba candidissima*, *N. Mexicana*, double forms of *N. Lotus*, *N. gigantea*, *N. pygmæa* with its forms alba, Helvola and many more. Besides these there were numerous other water-loving plants and a large bud of *Victoria regia*, which opened after it had been brought to the exhibition.

Pitcher & Manda's group of ornamental greenhouse plants was noteworthy, and in another hall they had a most interesting collection of hardy herbaceous flowers, including some beautiful Rudbeckias, different species of *Liatris*, *Veronica*, *Helianthus*, *Heliopsis* and *Statice*. *Cypripedium Charlesworthii* was blooming in very fair form and was on exhibition for the first time in this country so far as we are aware.

Mr. W. A. Manda, of South Orange, had an interesting show of Ivies, Orchids, Palms, and a new Fern, which is a neat variety of *Adiantum Capillus-Veneris*, called *Imbricata*, which resembled in the shape and airy grace of its fronds *Adiantum Farleyense*. No doubt, the variety will prove useful on account of its hardy qualities.

Mr. Charles D. Ball, of Holmesburg, Pennsylvania, showed an attractive assortment of Palms, Cycas, Ficus, Pandanus, etc., of usual trade sizes, and Robert Craig also had a meritorious exhibition, among which the Crotons, grown out-of-doors, were exceptionally well done. The Phlox of Ellwanger & Barry; Mr. John N. May's new Rose, Mrs. Whitney; a large collection of Canna blooms, in dishes of sand, exhibited by Dreer, of Philadelphia; a good collection of Orchids and other plants, including fine specimens of *Licuala grandis* from Messrs. Siebrecht & Wadley; Meteor Roses from F. R. Pier-son, of Tarrytown, New York, and the group of potted hybrid Perpetual Roses, from Storrs, Harrison & Co., were all noteworthy exhibits.

The report of the Nomenclature Committee, of which Professor Trelease is chairman, was very satisfactory because so few examples of misnaming plants in commercial lists were cited. The Carnation now sold as Lady Emma seems to be Portia, and the variety sent out this year as Bouton d'Or is Baron de Rothschild. The confusion among Chrysanthemums seems in a fair way of settlement, and among numerous new Cannas the only case of duplicate names given is that of Antoine Barton for Florence Vaughan. No doubt, the influence of the committee's inquiry has largely aided in the correction of errors.

Notes.

Mr. J. H. Hale gives it as his opinion that the Japanese plums will in a few years revolutionize Plum-cultivation in Connecticut, and that this delicious fruit will become as abundant and cheap in the home and the market as apples or peaches.

During the long drought good plants of *Rosa rugosa* have shown a few flowers every day, while the foliage holds its dark rich green color just as if the weather was most propitious. Occasionally a plant of *R. rugosa* is seen in which the flowers are inferior in color and by no means as abundant as in the best plants. There is little doubt that hybrids of some inferior variety have been put on the market as *R. rugosa*, and planters should be careful in selecting their stock.

The Currant, President Wilder, is considered by Mr. S. D. Willard as the most productive variety he has tried. It is a seedling of Versailles, better in quality than the Fay, and having large berries in good clusters. *The Country Gentleman*, in reporting on some specimens of the best varieties of currants sent by Mr. Willard, pronounces the White Imperial as equal in size to the White Grape, and altogether surpassing it in sweetness. Moore's Ruby is commended for a late table currant.

It is a pity that *Linaria vulgaris*, the common Butter-and-Eggs of every field and roadside, is such a troublesome weed that no one can be induced to admire it. The pale leaves surmounted by a dense raceme of orange-yellow flowers, with paler lemon-colored tips, are quite as handsome as those of many *Antirrhinums*, with which it is closely connected botanically, and then, when everything else is dried up, it seems to revel in these adverse conditions, so that, if anything, it is now rather more showy than usual.

The first train-load of California fruit shipped direct to London this year reached that city on schedule time last Wednesday. There were ten car-loads, comprising 45,000 packages, mainly Bartlett pears. The entire cost of transportation is \$700.00 a car-load, \$75.00 more than the cost from the Pacific coast to this city, making an average cost of seventy cents for each package. Other train-loads are now in transit to England, consisting of pears, peaches, plums, apricots and grapes. Cable reports of the first sale are hardly satisfactory to the growers, the main part of the shipment of pears having realized from \$1.00 to \$1.50 a box, which is no more than the same fruit commands in this city. A small part of the cargo in green condition brought, however, as much as \$3.00 a box, and the success of these long-distance shipments seems to depend in large measure on having the fruit reach its destination before it is over-ripe.

A correspondent of *The Country Gentleman* speaks of a Scuppernong Grape-vine from which forty bushels of grapes have been sold for two successive years, and it is probable that it will produce fifty bushels this year. The vine is trained over an arbor some twenty-five feet long by eighteen feet wide, and it is a foot in diameter at the ground. This is not at all an uncommon size, and a vine might easily cover an area of 2,000 square feet. The Scuppernong will not thrive north of thirty-seven degrees of latitude, but it is well known as a thick-skinned grape which keeps well and can be shipped long distances. It has a peculiar flavor, which is not disagreeable to many people, and it makes an acceptable wine. It reaches its best development in south-eastern Virginia and north-eastern Carolina, where it runs wild and often climbs forty feet or more into tree-tops. If allowed to grow with no pruning or care, except a trellis or something to run upon, it will usually give fair crops.

According to the Government report for August 1st, the general average of the potato-crop for the entire country fell from 92.3 per cent. on July 1st to 74 per cent. at the close of the month. This is the lowest average condition of the potato-crop ever reported, the general average at the same time last year being 84 per cent. In the principal potato-growing states which usually supply the chief distributing markets in the middle-western and eastern states, the average production this year will be even lower than the general average for the whole country in other years. Thirteen of these states now show an average crop of 66 per cent., as against 83.6 last year. The yield of New Jersey, for example, is rated at but 53 per cent. this year, for 69 per cent. in 1893; in Ohio there is a decrease of 12 per cent. from last year; in Illinois 17 per cent., and in Iowa 53 per cent. Potatoes now bring, at wholesale in the markets of this city, \$1.75 and \$2.00 a barrel, an advance of fifty cents a barrel within the past month. The present supply

comes from New Jersey and Long Island. While the home crop has been thus shortened by drought, the late crop in the United Kingdom is rated, at 92.8.

In one of the meetings of the American Forestry Association held in Brooklyn last week, Dr. Horace C. Hovey, of Newburyport, Massachusetts, showed by specimens and by views the petrified forests of Arizona. This great tract of agatized wood, at least 2,000 acres in extent, is near the stations of Corizzo and Adamanna, on the Atlantic and Pacific Railroad, in Arizona, and resembles an immense logging-camp with huge trunks thrown about. The largest are ten feet in diameter, many of them severed as evenly as though cut up by a cross-cut saw, and the sections vary from disks like cart-wheels to logs thirty and more feet long. Many of the petrified logs have been broken into glittering fragments by action of the weather and by Indians and tourists, and at every foot-fall the traveler steps upon a mosaic of cornelian, agate, jasper, topaz, onyx and amethyst. A petrified trunk 150 feet long spans a cañon, and is known as the Agate Bridge. The name Chalcedony Park has been given to the tract. Curiosity-hunters, manufacturers and speculators are rapidly destroying its beauties, and recently a company proceeded to pulverize the chips and logs, the powder to be used in place of emery. Car-loads of the petrified wood are being shipped away for this use, and Dr. Hovey advocates the saving and protection of these dead forests in a public reservation by the Government.

With Mount Pleasant Park, in Halifax, Nova Scotia, a natural woodland of undisturbed beauty extending along the magnificent harbor of that city, Victoria Park, in the town of Truro, ranks as the most distinctive and beautiful of natural parks in Nova Scotia. Founded eight years ago on the occasion of the Queen's Jubilee, by donations of land from seven citizens, one hundred acres of wooded ravine were thus acquired. The entrance is a wide open park space, which soon narrows to a shaded walk beside a brook. A succession of six waterfalls extends through the mile of park, the largest cascade, known as the Joe Howe Falls, being, perhaps, thirty-five feet high. Four miles of paths and walks lead through the densely wooded hill-sides and afford views of the precipitous opposite side of the ravine, one hundred feet high. In narrow side gorges, extending at right angles, springs have been opened up, and here the heavy cold air under the perpetual shade of dense Spruces and Firs, is twelve to fifteen degrees lower even than in more open parts of this charming rustic woodland. A carriage-road, three miles long, encircles the outer edge of the park on the plateau high above the ravine. This driveway overlooks Truro and many miles of rich agricultural country, and to the northward the head-waters of Cobequid Bay, the limit of the Bay of Fundy tides. The park is unspoiled woodland, and we hope that the utmost caution will be used in developing it so that its true spirit will be preserved, especially against the intrusion of any ornamentation or construction, beyond that which is necessary to make its natural beauties available.

Dispatches from the interior of New York state report plums and pears so plentiful that they will scarcely pay for the packing and shipping, and surprisingly large quantities of these fruits are seen in all the wholesale fruit markets here. Bartlett and Flemish Beauty pears may be bought for \$1.50 to \$2.50 a barrel, a dollar more being asked for Seckel pears, while Belle, Lucrative and Catherine are offered at \$1.75 to \$2.00, and Clapp's Favorite at \$2.00 to \$2.50 a barrel. Purple Egg plums, Greengages and Damsons are as low as \$2.00 a barrel, and these are also offered in kegs and baskets at proportionate rates. German prunes, a large and fleshy fruit, sell at thirty cents for an eight-pound basket. Plentiful supplies of grapes are here from Virginia and the states northward, including Concord, Champion, Moore's Early, Worden, Delaware and Niagara from this state. Retail prices now range from twenty cents for a five-pound basket of Champions to sixty cents for the same quantity of Delawares. Much of this fruit is hurried to market before it is fully ripened, with the result of poor flavor and quality. The best New Jersey peaches were offered last Saturday at \$1.50 a basket, and smaller fruit could be had at seventy-five cents. Besides the large and varied supply of fruits from near-by localities, 115 car-loads from California were sold here last week. Among peaches Early Crawford, Late Crawford, Wheatland, Susquehanna, Foster and Muir brought the highest prices. California plums included large shipments of Gros prunes, and these, with German prunes, Kelsey and Fellenberg plums, brought an average of \$1.50 a box. Botan, Victoria, French, Bulgarian and Coe's Golden Drop are among the many varieties now seen here.

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Public Holdings in Massachusetts.

THE third annual report of the Trustees of Public Reservations in Massachusetts shows that the prevailing financial depression has prevented that body from receiving any new trusts during the past year, and confines itself, therefore, to drawing attention to the gradual encroachments of private owners upon commons, shores and other property which ought to be protected by the towns to which they belong, and preserved for the use and pleasure of the people.

It also shows that the example of the Massachusetts society has attracted attention in England, and that in October, 1893, an article was published in the English *Spectator* descriptive of the powers and purposes of the "Massachusetts Trustees of Public Reservations," followed by several letters indicating a desire for the establishment in the mother country of an organization endowed with powers similar to those possessed by the Board here. One of these letters suggests that it would be quite as much to the purpose for the British Government to expend money in buying natural scenery as to spend thousands in purchasing pictures for the National Gallery; and that if there were a body furnished with an annual grant and empowered to purchase property of national interest, it could often acquire places of note at a moderate cost. This letter further states that the waterfall of Lodore was in October advertised for sale; that Snowdon had been in the market shortly before; and it represents that fine scenery is apt to go at extraordinarily low prices from its having no agricultural value, as it is usually mountainous and wild, and worth little or nothing to the farmer.

In December an American newspaper paragraph reported the organization in England of "The National Trust for Places of Historic Interest or Natural Beauty," with the Duke of Westminster, Lord Dufferin, Lord Rosebery, Sir Frederic Leighton, Professor Huxley, Miss Octavia Hill and other persons distinguished in art, letters or practical affairs, as members of its provisional committee, for the purpose of acting as general trustee for all property intended for the use and enjoyment of the nation at large. The function of

the trust is to accept from private owners of property gifts which can only be made when there is a perpetual custodian and administrator, and it will be incorporated under the Joint Stock Companies' Act, and endowed with special privileges in consideration of its responsibilities. The Standing Committee of the Massachusetts Board suggests, apropos of this action, that though Massachusetts possesses no such rich historical treasures as are to be found in England, "she still does possess great wealth of beautiful, though now threatened, natural scenery, and an interesting, though rapidly disappearing, store of archæological and historical sites, such as Indian camps and graves, border forts and colonial or literary landmarks," which ought to be acquired. A preliminary, but incomplete, list is annexed to the report of those who have given lands for public reservations in Massachusetts up to this time, showing that since the formation of the society in 1891 it has received bequests from more than eighty-four donors, a most encouraging exhibition of the public spirit which animates individuals in the Bay state. The fact that eighteen of the early settlements in Massachusetts set apart "training-fields," which have survived as public reservations until the present day, shows the wise forethought of the founders of those towns, a forethought which we trust will be shared by those who now have the opportunity to acquire property at small cost for the benefit of the future population.

Some of the duties of the original Board have now passed over to its offspring, the Metropolitan Park Commission, which body, endowed with a right of eminent domain, and equipped with a million dollars to work with, has been engaged in securing great forest-reservations in the Blue Hills and the Middlesex Fells, and it is understood that a large part of Revere Beach will also be obtained by it. This Commission, with the Hon. Charles Francis Adams at its head, has by its extended powers been able to accomplish what the Trustees of Public Reservations could only suggest. Outside of the range of the Metropolitan District the latter Board is the only ready instrument through which the admirers of any beautiful and historic spot can provide for its preservation and perpetual care, where there is no existing local park commission.

Many towns are unwilling to accept bequests, so that it is of great use to the public to have a legal opportunity to bestow property which the owners or would-be purchasers desire to safely convey for the general benefit of a community which may be too short-sighted to avail itself of a gift. It was only with great reluctance that Plymouth could be induced to accept the generous gift from Mr. Nathaniel Morton and others, of the park which is now its pride, but for which this year it has refused to make any appropriation. A similar difficulty was experienced in Lynn, and as it takes years sometimes to educate a community it is fortunate that during the process there is a protector of the property at hand.

The report on the shore-towns of Massachusetts, compiled by Mr. H. B. Hastings, the agent of the society, is a melancholy chapter of public lands sacrificed and public rights neglected and lost. In former volumes of *GARDEN AND FOREST* a full account of the public holdings along the shore of the state was given, together with the history of the steps by which a large portion of them has passed under private or corporate control, so that the people are fenced away from the beach and only permitted to enjoy the companionship of the sea by sufferance or for a fee. The story, as revised up to the present time in this report, is one of an inheritance squandered through lack of appreciation of its value. Of course, the condition in some towns is worse than it is in others, but there is no need here to state special instances. One cannot read of highways closed, of grounds dedicated to public use to which the public is now denied admission, of so called water parks turned into dumping-grounds, of unresisted encroachment upon public lands everywhere, without some nation. And yet this practical stealing of the p

has taken place before the eyes of its rightful owners, who generally have made no protest because they had no appreciation of its value. Even when attention is now called to the robbery it is difficult to organize any efficient resistance to it, and it is almost impossible to prevail upon the authorities to make any effort to secure new holdings, however valuable for beauty or association. A report like this is never widely circulated, but it ought to reach the eyes of enough intelligent men to arouse them from their apathy, and if the local newspapers of Massachusetts have any public spirit they will not cease to agitate this matter until the public title to common land is restored wherever such restoration is possible. It is to be feared that in many cases it is already too late for resistance. What the early settlers of the Commonwealth wisely secured for their descendants these recreant children have thrown away by culpable negligence, and unless vigorous action is taken future generations will find themselves shut out from the shores of the sea to which they have an inherited right.

Cold Storage.

EXPERIMENTAL attempts at cold storage began in this city eighteen years ago, and developed into a commercial industry three years later. Since then the knowledge of scientists and inventors has been combined with the practical experience and capital of warehousemen, until now the business of cold storage and freezing is a considerable factor in the market-supply of the world. At first the cold air from refrigerators on the ground-floor was forced to storerooms above, but this plan was soon given up for the system, still in limited use, of massing ice at the top of buildings, so that a current of cold air is drawn by gravity through shafts to the lower floors. By this system only cold storage at thirty-eight degrees and above is possible, while actual freezing is necessary for many classes of goods. One of the nine large cold-storage warehouses in this city uses a system of metal pipes ten inches in diameter, which encircle storage-rooms. These begin below the "charging-floor," the upper story of the building. Here ice is broken up by hand-power, the sectional trap-doors are lifted, and the pipes, set close beside each other and extending down to the floors below, are closely packed with ice and salt. The drainage from these, which is collected on the second floor, is utilized to cool rooms on the ground-floor to a temperature of forty degrees. This method of cold storage is especially adapted for holding comparatively small amounts of perishable goods, without the cost of expensive machinery.

The system most generally in use, however, is that of producing intense cold by the evaporation of ammonia, and one of the largest and best-equipped cold warehouses uses the so-called "direct expansion" system—which it is not necessary here to explain. In this immense establishment, which comprises in two warehouses 1,500,000 cubic feet of cold storage and freezing space, eight boilers, each of seventy-five horse-power, are used in the smaller building alone. The engines, compressors and all parts of the machinery are in duplicate, so that if one set is disabled the other set of machinery may be started and the requisite temperature throughout the building steadily maintained. Whatever the method used, the effect aimed at is the reverse of steam-heating, that is, to grasp and carry heat out of the rooms which it is desired to refrigerate. The brine which is produced by the ammoniacal-gas process and conveyed throughout the buildings in main pipes and smaller coils, leaves the manufacturing room in the basement at zero and returns from the circuit only five degrees higher. All this apparatus in specially constructed buildings costs money, and at the present time more than \$4,000,000 are invested in cold storage in this city alone.

The first floor of these great buildings is usually occupied by offices and open space necessary for receiving and discharging goods, and the storage floors above are reached by heavy freight elevators. Passing through a small ante-

room on leaving the elevator, the "bulkhead," or thick wall, which is air-spaced and padded so as to be as nearly as possible a non-conductor of heat, is reached. The heavy door swings open, and a change of fifty to seventy degrees is realized in a second of time. The purity of the atmosphere and the uniform temperature of each room or "box" are evident. Tiers of goods extend to the ceiling, closely packed along immense floor spaces, or in smaller lots in separated rooms. To the visitor, who, as well as the guide, is protected with heavy wraps, the long stretches of pipes and rafters covered with frost crystals glittering in the electric light present a strange and beautiful spectacle. Poultry, meats, fish, butter and eggs are stored in largest quantity, and actual experiments show that these usually perishable goods can be held in cold storage almost indefinitely, and meat and fish frozen and kept for five years have come out in good marketable condition.

By this preservative process a glut is prevented in periods of too plentiful supply, the season for perishable goods is lengthened to extend the year through, and prices are equalized to the profit of both producer and consumer. For example, yearling turkeys, which last February were stored and frozen, and since kept in a dry air at ten to fifteen degrees, are now the choice delicacy offered in the best hotels, and bring in the markets three cents a pound more than the best spring turkeys. But even in this favoring market there is not much profit to the merchant, since a third of a cent per pound is charged for the cold storage of poultry a month, and the higher rate of half a cent a pound each month for freezing. The prices charged for storage are, however, nearly fifty per cent. lower than they were ten, or even five, years ago.

The vegetable and fruit supply of this district has been strikingly influenced by cold storage. Peas, lima beans, lettuce, okra, celery and other seasonable vegetables are at this time stored by wholesale merchants for a few days or a week to hold steady a variable supply. Large quantities of domestic pears are also being carried on short-term storage. Considering the oversupply of California fruit now reaching this city, it is at first a surprise that none of it is being held for higher prices, but this is because the summer varieties, which alone are now coming, cannot be safely held even in the cold dry air of these warehouses. Tokay and other grapes of vinifera blood later in the season are successfully held for three weeks, and Cornichons have been kept for six weeks and even two months. The more delicate varieties of grapes from this state and Ohio remain in good condition for several months, until the supply is exhausted by Thanksgiving season. The tough-skinned Catawbas, however, are brought out of an atmosphere of about thirty-five degrees as late as April, when even the Almeria season is past. Domestic pears come from the refrigerating houses until midwinter, and some California pears, notably P. Barry, are kept successfully and profitably as late as June. Instances of large profit in carrying these pears are often cited. For example, lots stored in September, when they sold for \$1.98 a box, commanded \$8.00 a box nine months later.

Late spring varieties of Florida oranges often yield the largest profits of this crop, and are known to have quadrupled in value by July. In fact, oranges can be kept almost indefinitely, although they are rarely held more than sixty days without deteriorating somewhat in quality.

Horse-radish, stored last spring when it cost three to four cents a pound, is now selling as high as ten cents, and buckwheat-flour, after having been carefully cooled and kept against all objectionable intruders during the summer months, will soon be selling to eager buyers as the first new buckwheat of this year. Dried fruits and nuts are similarly protected during the warm weather, and seed corn and peas are kept in a freezing temperature to prevent sprouting and to destroy weevils. Owing to an abundance of cabbage last year, quantities of sauerkraut were stored, and this has proved a lucky venture on account of the failure of this season's cabbage crop.

These artificial low temperatures, besides their uses in arresting the decay and retarding the maturity of fruits and vegetables, are applied to other purposes connected with horticulture. Nursery-stock has been kept in a cool temperature in good condition for three years, with the roots plump and ready for growing when taken out. Hardy plants which are intended for forcing are often frozen after they are lifted, so as to give them their needed experience of a winter, after which they will push forward with healthy energy. Imported pips of Lily-of-the-valley are largely held in cold storage, not only to preserve them, but because they start more quickly and strongly after having been frozen. Bermuda Lily-bulbs and other stock of this sort are also treated successfully in this way.

Refrigerator cars have made it possible to transport California fruit to New York, and some of the freezing processes on shipboard have been so perfected that perishable fruit can soon be sent all over the world. Unsound fruit cannot be saved by cold storage, but it can be kept in good condition if it is sound and not too ripe when first placed there. Cold warehouses in fruit districts have been advocated for storing the products of a neighborhood, so that they can be held for shipping until a time when the demand would make it profitable. To a certain extent this is practicable, but, as a rule, it is not safe to ship fruits after they have been a long time chilled, and, in a majority of cases, it seems preferable to transport the fruit directly from the orchard or the vineyard to its destined market, and then, after carefully selecting and packing that which is not overripe; to hold it until the time of demand. Many of the grape growers of this state will ship directly from their vineyards a part of their crop this year, to be refrigerated in this city. It is claimed that the fruit keeps better when treated in this way than when it is stored in cold houses at home and shipped to this city afterward.

New York.

M. B. C.

Nature's Planting Plans.

THE best suggestions for planting are often found by wood-borders and waysides, where combinations of color in nature produce effects which we may not be able to copy literally—indeed, any attempt at exact imitation is only a counterfeit of nature and is spurious art—but which certainly ought to furnish motives and hints that can be made useful when we are growing plants, not so much for the purpose of displaying them individually as of grouping them in arrangements which will have a pictorial effect. A point to be noticed in natural combinations is that there is usually a great deal of green of one shade or another in them all, so that while we often see considerable masses of the brightest colors, they always appear against a green background where they show to best advantage.

On a recent journey through New Jersey I observed the railway-banks bright with the orange flowers of *Asclepias tuberosa*, and these seemed brighter still because of the meadow which stretched beyond them; and in this same meadow, farther on, the lilac-purple of the *Liatris*, standing in the grass and softened by the distance, was very pleasing. Another pretty combination was a field of Cat-tails with the rose-colored flowers of the Swamp Rose Mallow glimmering behind and through them. In the pure sand of The Barrens, *Cassia chamaecrista* often stretches along the track like a band of gold, and one can ride by it for miles and never tire, so long as the green grass and foliage beyond serve as a foil and contrast.

One picture of which I caught a brief view as we rolled by was that of a brackish pond surrounded with high Sedges, and among these were groups of pink and white Rose Mal-lows. As a relief to the monotonous level of the place there were two hummocks upon which strong masses of *Clethra* had grown and were then in full flower. In front of these, toward the edge of the pond, were lower Marsh Grasses, overtopped with the white heads of Cotton Grass

and the white flowers of *Eupatorium*, and these again were pierced here and there with the intense purple spikes of *Vernonia*.

Arnold Arboretum.

Jackson Dawson.

Foreign Correspondence.

London Letter.

THERE were more new and interesting plants than usual exhibited at the meeting of the Royal Horticultural Society held on Tuesday last. In addition to those here described there were new varieties of *Gladiolus* from Messrs. Kelway, of Langport, whose development of this genus from the point of view of horticulture is marvelous. Dahlias also were largely exhibited and some were awarded certificates. A group of Crotons, comprising fifty-seven varieties, all represented by perfectly grown, richly colored little specimens about two feet high, was sufficiently attractive to recall cultivators to the value of these plants, now fallen into comparative neglect. New *Caladiums*, new Cannas, a group of Cockscombs, from Mr. Cannell, showing twelve distinct shades of color, with large groups of choice herbaceous plants, were principal features among the exhibits.

DISA NERVOSA.—Although described by Lindley forty years ago from specimens collected by Drège at the Cape, this distinct and handsome-flowered species has only recently been introduced into cultivation, plants sent to Kew from Natal last year being now in flower. The whole plant, including the spike, is two and a half feet high; the leaves are linear-lanceolate, ten inches or less in length, bright green tinged with red at the sheathing base. The scape is erect, leafy, and it bears two dozen flowers, forming a spike five inches across and high. The pedicels are over an inch long, the bracts linear and nearly as long; segments of the flower an inch long, curved, the dorsal sepal arched and concave, the base prolonged into a straight slender spur nearly an inch long; lip very small, concave, and attached to its base is a slender filament an inch long, which stands straight out from the flower, and is slightly curved and thickened at the tip. The whole flower is colored bright rose-pink. The genus *Disa* is a very variable one, and it is difficult to see at a glance the generic relationship of such species as the above and *D. grandiflora* and *D. graminifolia*.

LÆLIO-CATTLEYA BROOMFIELDENSIS.—This is a new hybrid between *L. præstans* and *C. aurea*. It has the general habit of the *Lælia* slightly modified, the flowers being larger and the lip very handsome, intermediate in size and form, and colored rich maroon-crimson, with orange veins at the base. It was awarded a first-class certificate and was generally considered to be one of the best of recent hybrids. It was shown in flower by Mr. W. Wells, of Broomfield, Sale.

CYPRIPEDIUM W. R. LEE.—This hybrid between *C. superbiens* and *C. Elliottianum* was raised by Mr. Lee, of Manchester, who showed it in flower this week and obtained for it an award of merit. It is in the way of *C. Morganiae*, but the flowers are larger, coarser and duller in color, being greenish white and dull brown-purple, the petals dotted with black-purple. It is only fair to say that there were good judges who considered it one of the handsomest and most striking of hybrid *Cypripediums*.

CYPRIPEDIUM CHARLESWORTHII.—Messrs. H. Low & Co. exhibited this week a group of over sixty plants of this in flower, which showed considerable variety in the shade of mauve or rose-purple and in the shape of the dorsal sepal. It is a first-rate *Cypripedium*, and is said to be as sturdy as *C. Spicerianum*, which is now generally grown in a cool house along with *C. insignis*.

CATTLEYA ASHTONIANA.—This new hybrid between *C. Harrisoniae* and *C. Warscewiczii* (gigas) has the pseudo-bulbs and foliage of the former and flowers like those of the latter parent, but smaller, and colored pale-mauve, except the broad labellum, which is deep crimson with purple

streaks and a yellow throat. It was raised by the exhibitors, Messrs. Lewis & Co., Southgate.

BLETIA WATSONIANA was shown as a new plant by Messrs. Sander & Co. and obtained an award of merit. According to Mr. Rolfe, however, it is *B. catenulata* of Ruiz & Pavon, a Peruvian species in the way of *B. secunda*. Although not new to science it is new to cultivation. It has large pseudo-bulbs, plicate leaves, and an erect scape bearing a few medium-sized rose-purple flowers.

ADIANTUM AMABILE PLUMOSUM AND *A. HEMSLEYANUM*.—These two new Ferns obtained certificates this week and are certain to become favorites in the garden. They were exhibited by Mr. May, of Edmonton, a famous grower of and dealer in Ferns, with whom they had originated. The first-named has fronds of the same graceful character as the type, but the stipes are shorter and stiffer and the divisions of the frond shorter. It may be described as a form of *A. amabile* with the habit of ordinary *A. cuneatum*. It is probably a sport from *A. cuneatum*. The second, *A. Hemsleyanum*, has fronds eighteen inches high, semi-erect, with pinnæ like those of *A. cuneatum*, but less crowded and more rigid. It is a perfect plant for dinner-table decoration, owing to the grace and looseness of its fronds, and it is likely to become popular with growers of plants for furnishing ball-rooms, etc.

PTERIS BIAURITA ARGENTEA.—This is a distinct and ornamental variety of one of the most useful, as it is one of the most cosmopolitan, of all Ferns. Mr. May exhibited fine examples of it this week, and it was awarded a first-class certificate. It differs from the type and all other cultivated varieties in having stout, sturdy fronds, the pinnæ almost leathery in texture and pleasingly variegated with silvery gray on a green ground.

PTERIS SEKKULATA GRACILIS MULTICEPS.—This lengthy name is fairly descriptive of an exceptionally elegant variety of this most multifarious Fern. It was shown by Mr. May, and was awarded a certificate because of its drooping, graceful habit, the fronds arching over, and the very narrow pinnæ ending in elegant tassels. It is the prettiest of the many smaller forms of this *Pteris*. A plant in a five-inch pot had a tuft of fronds nine inches high, a foot through, and these completely hid the whole of the pot in their tessellated ends.

BEGONIA RAJAH.—The number of *Begonias* that are popular because of their leaf variegation is considerable. Messrs. Veitch added one of decided prettiness last year in *B. decora*, and now Messrs. F. Sander & Co. have added another of equal promise, though widely different in character. It was shown under the above name this week, and received a certificate. Its origin has not yet been published, but I suspect it is Malayan. It has a fleshy, scale-clad root-stock or stem, from which spring suberect leaf-stalks six to nine inches long, supporting orbicular leaves about six inches across, the surface bullate and colored dark brown, with broad reticulating lines of bright green.

BEGONIA REX-SOCOTRANA.—This is a new hybrid between the two widely divergent species named, which has recently been raised in the nurseries of Messrs. J. Veitch & Sons. It is chiefly interesting as proving that such a cross is possible. It was exhibited this week, but obtained no award.

ASPARAGUS SARMENTOSUS.—One of the prettiest of greenhouse-plants now flowering here is a specimen of this Cape Asparagus, which was brought from near Grahamstown in 1887, and which is now an elegant mass of stems two feet high, clothed with numerous branches and falcate green leaves in such a way as to give each branch the outline and fullness of a fine fox-brush. The plant is evergreen, and worth growing for the sake of its elegant branches alone. But when these branches are transformed, as they have been this summer, into delightful plumes of white fragrant flowers, their decorative value is increased tenfold. There are more than a score of species of African Asparagi in cultivation here, and this is by far the prettiest of the larger-leaved sorts. *A. sarmentosus* is an old

inmate of gardens, but it appears to be variable, and probably this form now at Kew is a superior one. Except on this theory, it is difficult to understand how this species has been overlooked in modern horticulture.

EUCRYPHIA PINNATIFOLIA.—This handsome Chilean shrub is flowering exceptionally well in English gardens this year. It is better at Kew than I have ever seen it, bushes five feet high being laden with flowers. It will bear twenty degrees of frost, possibly more, if the growth is well ripened, and it does not like drought. Although introduced from Chili twenty years ago by Messrs. Veitch, it has not yet become a popular shrub with us, but its success this year is sure to bring it into general favor. In Chili it forms a bush ten feet high, clothed with dark green, glabrous, pinnate leaves six inches long. The flowers are developed with us in July and August, each one being three inches in diameter, pure white, with a large bunch of slender stamens tipped with brown-red anthers. They are more cupped than a rose, otherwise they resemble a beautiful white single rose, and are superior to any rose in lasting several days after expanding.

RUBUS PHENICOLASIUS.—This was shown as a new plant, and was awarded a first-class certificate. It is likely to receive more attention in England than it has hitherto, for, except to very few, it is an unknown plant here, and those who know it have formed but a poor opinion of it.

[This plant has been known for a great many years in this country, and under the name of the Japanese Wineberry it has lately been disseminated pretty widely among farmers and fruit-growers. There are varying reports as to its merits, but it is not considered of any value as a market fruit on account of its softness. It has a sprightly acid flavor, which is liked by some people, and it is useful for various culinary purposes. It is hardy as far north as New York certainly, and it is worth planting for ornament, if for no other purpose. The opinion seems to be gaining ground that it will find a permanent place for home use in a small way in country gardens.—Ed.]

CARNATIONS.—Every meeting of the Royal Horticultural Society brings forth new and meritorious varieties of these Pinks, a fact which shows the popular interest in them. This week the following received awards: Ellen Terry, a large full white, first-class in every way; Paradox, a border variety with full, broad-petaled, bright scarlet flowers; Waterwitch, a blush-white, good in size and form. These were shown by Mr. J. Douglas, Great Bookham, now a nurseryman, but still devoted to his old favorites—Carnations, Auriculas, etc.

London.

W. Watson.

New or Little-known Plants.

Nymphæa Sturtevantii.

THIS is one of the newer varieties of tropical *Nymphæas* and one of the handsomest and most distinct of Water-lilies. Its history, as given by its originator, Mr. E. D. Sturtevant, of Bordentown, New Jersey, is this:

Nymphæa Sturtevantii is not a hybrid in the ordinary sense of the term; it is a seedling sport from a hybrid. Its history is as follows: About 1880 I had a plant of the true *Nymphæa Devoniensis* growing in a tank built especially for the Victoria regia. It was in the open air, and the *Nymphæa* received the same treatment as would have been given to a Victoria, namely, a large bed of very rich compost and artificial heat. The plant attained great size, covering a space of twenty feet in diameter, having leaves twenty-five inches across, and flowers of the breadth of twelve inches. I made no attempt at hybridization with these flowers, nor can I remember growing any other plants in the vicinity to whose influence the new variety can be traced. A seed-vessel was allowed to ripen, and the next winter the seed from it was sown. Numerous young plants were raised, and among them one, and one only, appeared with leaves entirely distinct from the parent. This proved to be a new variety, and from its immediate ancestry it seems that it may be a reversion toward some prehistoric type, or an evolution of a new one. The cup-shaped form of the flower, the great breadth of the petals, the increased size



Fig. 57.—*Nymphaea Sturtevantii*—reduced.—See page 354.

of the stamens, the great abundance of pollen, are all marked characteristics. Mr. W. Watson, of Kew Gardens, speaks of the color of the flowers as a "soft delicate pink," but as grown in the open air in America, the color is deeper, especially if the water is artificially heated, when it is as deep a red as is ever found in *N. rubra*, though of a different tone. Mr. Watson speaks of the leaves as "apple green"; here they are often near the color of *Coleus Verschaffeltii*. I have never known *N. Sturtevantii* to produce seed. While it may be well grown with the treatment commonly given to *N. Devoniensis*, the best results are obtained when it has abundant root-room and artificially heated water.

Nymphæa Devoniensis, given as the parent of *N. Sturtevantii*, is an hybrid produced at Chatsworth in 1851 by Sir Joseph Paxton, and seemingly considered by him a mule, and was so described in the first notice of the variety in the *Gardeners' Chronicle*, July 10th, 1852. It is usually considered sterile by cultivators, and an examination of an ordinary flower will show that while it is well furnished with pollen, the female parts are imperfectly developed. It seems that these organs became fertile under the stimulus of Mr. Sturtevant's generous culture. It is, however, a curious freak that from the fertile seed produced by this plant one only of the number should have varied from the type.

There is much confusion among the *Nymphæas*, both hardy and tropical, and *Nymphæa rubra*, the grandparent of *N. Sturtevantii*, has not escaped its share. Its flowers are fertile and readily cross with other species, and even when uncrossed the seedlings sometimes vary in size, form and coloring. There are several forms grown in gardens; and though this and *N. Devoniensis* have been often confused by growers, it does not seem difficult to fix the normal types. We have little help, however, toward this in the published figures of *N. rubra* in the *Botanical Magazine* and Paxton's *Magazine of Botany*. In the former it is figured as a dark rosy carmine flower, quite single and with loose irregular petals, which are black on the reverse, resembling the figures of the flower of *N. rubro-rosea*, which is somewhat more double and lighter-colored, with bright yellow stamens. The *Magazine of Botany* figures *N. rubra* as resembling a very bright rich crimson Cactus Dahlia, with stamens of the same color, but of the normal shape as we know them.

Making allowances for the deficiencies of art in these figures, *Nymphæa rubra* in our gardens has taken on a nobility of form and a delicacy of color unknown to those by whom they have been figured. Good forms of this plant grown in our gardens are of a deep rosy carmine, eight to ten or more inches in diameter, with petals intermediate in width between those of *N. Devoniensis* and *N. Sturtevantii*, and not as sharp-pointed as those of the former variety. The leaves are a very dark olive-green, with darker spots, sometimes quite indistinct. The petals are narrow, strap-shaped, dull brick-red, and with two narrow lines of yellow anthers on the inner side.

Nymphæa Sturtevantii is, as shown in the illustration (see page 355), a variety with wide petals and somewhat cupped form. The coloring is brighter than that of *N. rubra* and not so bluish in tone. The leaves are distinct from those of all other *Nymphæas*, with a color difficult to describe, but of a dull reddish coppery hue. It is a beautiful plant when in flower, but is not so free in bloom usually as its parent. *N. Devoniensis* is now well known as a beautiful night-blooming Lily, with flowers of a still lighter shade, with narrow petals and very dark shining leaves, whose rich color reminds one of the Copper Beech.

In the first description there is a seeming confusion as to whether *Nymphæa Devoniensis* is a hybrid of *N. rubra* with *N. dentata* or with *N. Lotus*. *N. rubra* is classed as a red form of *N. Lotus*, and the other parent may be the ordinary *N. Lotus* or the *N. Lotus* of Sims (*N. thermalis*). While *N. dentata* and *N. Lotus* are botanically alike, as garden-plants they are very dissimilar, the latter, as we know them, being cup-shaped, and the former being very open, with somewhat narrow petals. In seeking to duplicate *N. Devoniensis* one

would naturally try *N. dentata* as the pollen plant, and expect forms approaching that of *N. Sturtevantii* when *N. Lotus* furnished the pollen. It would be interesting to know the exact difference in forms between the plant illustrated and *N. Kewensis*, which in 1888 was said to have been secured between *N. Lotus* and *N. Devoniensis*. Some promising crosses between *N. dentata* and *N. rubra* are now under trial by American growers.

For the opportunity of figuring this flower we are indebted to W. W. Lee, Esq., of Northampton, Massachusetts, who not only grows *Nymphæas* to great perfection, but has secured a remarkable series of life-size photographs of the different species. The picture, which had to be reduced one-fourth in order to appear on a page of this size, represents the flower on the third day after opening. It is at its best on the fourth day.

Elizabeth, N. J.

J. N. Gerard.

Plant Notes.

PYRUS ARBUTIFOLIA.—A correspondent who has been observing the Choke-berry, as it frequently appears along the roadsides in western New York, writes to inquire why a shrub so attractive has not been commended in our pages for planting in parks and private grounds. As a matter of fact, attention has been called to this plant in every volume of *GARDEN AND FOREST*. Its handsome white flowers, nearly an inch across, often tinged with purple, and with conspicuous brown anthers, are borne in downy corymbs, which make it exceedingly attractive. There are two varieties of the plant so well marked as to suggest that they be made separate species. One bears scarlet fruit and one black, the first having a rather more southern range than the other, although the plants appear together occasionally in New England. The scarlet-fruited plant blooms in early June, and the fruit, which does not ripen until late in October, remains on the branches in full color well into the winter. The black-fruited Choke-berry flowers a fortnight earlier and ripens its dark vinous purple and lustrous fruit early in September. In habit this plant is rather more dense than the scarlet-fruited kind, and it has more ornamental foliage. The fruit varies much in color, some varieties being deep wine-colored, but it all falls as soon as it is ripe. *Pyrus arbutifolia* was figured in vol. iii., page 417, and the differences between the two forms were fully explained. Both of them vary considerably in the shape of the leaves and in the size and color of the flowers, and it is not improbable that they could be greatly improved by cultivation and selection. Certainly, they are both desirable hardy shrubs.

GORDONIA ALTAMAHA.—Something more than a month ago a correspondent in Washington sent us several of the Camellia-like flowers of this tree, and a few days since we were favored in the same way by Mr. Joseph Meehan, who has more than once, in these columns, assured all who have been deterred from planting it on account of its reputation for tenderness, that it is reliably hardy, at least as far north as the latitude of Philadelphia. Certainly there are some very fine examples in Fairmount Park and in Germantown. The original tree in Bartram's garden died some years ago, but a sucker from it is now living, and the largest tree in Germantown, which is now some twenty feet high, was taken from a layer of this plant. The tree will thrive best under conditions favorable to Rhododendrons—that is, in deep rich soil and in a partly shaded condition. It cannot endure hot, shallow soil. The *Gordonia* originally came from Georgia, although, as it is well known, it has not been seen in a wild state since Bartram saw it more than a hundred years ago. Perhaps it might thrive in sheltered situations considerably north of Philadelphia; indeed, it flowers annually in the Arnold Arboretum, but every autumn the tree, or shrub, as it is there, is pegged down to the ground and covered with leaves and soil. Wherever it will live it exceeds in beauty any of our summer-flowering trees. These flowers in the latitude of Washington are produced continually from July

until the middle of October. They are pure white, and bear some resemblance to the flowers of the smaller Magnolias. They have five broad petals somewhat incurved, so that they never open widely, but give the flower a half-expanded appearance. They are some three inches across, and a cluster of yellow stamens and anthers adds much to their beauty. The odor is very delicate and contains a suggestion of tea, which is hardly surprising since *Gordonia* is as nearly allied to the Tea-plant as any of our American trees. The leaves are dark, with an evergreen appearance, and they turn in autumn to rich crimson. Altogether, its charms are sufficient to tempt any planter in the middle states who has a suitable soil and position to test the hardiness of this *Franklinia*, as it is often called in the catalogues.

VERONICA LONGIFOLIA SUBSESSILIS.—A vase filled with tall spikes of this hardy herbaceous Speedwell at the exhibition connected with the Florists' Convention reminded us once more that this is probably the best among the late-blooming species of this numerous and very useful genus. This variety is perfectly hardy, the spike is much longer than that of the species, and the flowers are larger and of an intense blue and singularly lustrous. It grows from two to four feet high, according to the richness of the soil in which it is placed, thriving best in deep rich ground and in open situations. It is easily increased by division of the roots. Of course, there are other species which should not be neglected, among them *V. cercæoides*, which blooms in late spring, and the low-growing *V. rupestris*, which closely follows it and spreads out in a mat of bright color. The hoary-leaved *V. incana* is well known as a good plant for rock-work and effective in border lines, while our native *V. officinalis* has proved an admirable plant under trees and other shady places where the grass will not grow, covering the ground with a permanent sod. The European variety, *V. repens*, is another creeping species which is said to make a close sward-like growth in a short time. All these have their special uses and their special seasons; but for flowering now, the Japanese plant, which is the subject of this note, is so robust and distinct that no considerable collection of hardy plants should be without it.

Cultural Department.

Ornamental Fruits for the Conservatory.

THERE is no lack of flowering plants for the winter decoration of the conservatory, but it should not be forgotten that well-grown specimens of certain berry-bearing plants will prove equally attractive, especially for temperate or cool houses, such as are frequently formed by enclosing a portion of a veranda. A structure of this kind is often the only available one for the amateur cultivator, but it is capable of giving much pleasure to the owner, providing a proper selection of plants is made.

Among the species adapted to such use are the *Aucubas*, plants which are nearly hardy and have such tough foliage as to be almost dust-proof. *Aucuba Japonica* is an easy subject to manage, requiring only to be potted in good loam, with sufficient drainage to protect it against stagnant water at the roots. Cuttings from half-ripened wood root readily, and the young plants will make the best progress when planted outdoors during the summer, although they should be lifted and potted up before hard frost comes in the fall. These plants are unisexual, and it is, therefore, necessary to have both male and female in order to secure a crop of berries. The fertilization of the female flowers is very readily performed, it being only required to shake the pollen from the male plant over the flowers to insure the setting of the fruit.

Callicarpa purpurea, though quite hardy in many portions of the United States, is a highly ornamental species for indoor use, its slender shoots being profusely dotted with small clusters of purple berries, which are not large enough to be very striking individually, but decidedly attractive on the plant. This, also, is not difficult to propagate from cuttings of soft wood in the spring, while hard-wood cuttings may be handled much the same as those of *Deutzias* and similar shrubs, but, naturally, take somewhat longer to root than those of young growth.

The *Ardisias* should not be overlooked if the temperature of the house does not go below forty-five to fifty degrees in the winter, and of these the well-known *A. crenulata* is probably the most satisfactory, since it makes a sturdy dwarf plant and can be nicely berried while growing in a five-inch pot. *A. crispa* is another good form, somewhat stronger in growth than the foregoing, and, like that species, carrying bright red berries about the size of peas. The culture of these plants is quite simple, good loam of a sandy character being the best compost, but strict attention should be given to watering, for while they require abundant moisture during the growing season, yet stagnant water at the root will cause total failure.

The Jerusalem Cherry, which does not come from Jerusalem and is not a Cherry in any proper sense of the word, but is known botanically as *Solanum capsicastrum*, is one of the best plants with ornamental berries for amateurs. It thrives under ordinary care, and its bright fruits are freely produced and last in full beauty for a long time. *S. capsicastrum* can be multiplied either by cuttings or from seeds, and the young plants should be grown on out-of-doors during the summer, with frequent pinching of the leading shoots to keep them in shape and produce a stocky growth.

The dwarf Oranges are also good subjects, with their golden fruits, glossy foliage and fragrant flowers. They are interesting and attractive at all times, and particularly so when the beauty of fruit and leaf and flower are all displayed on a single plant at the same time.

The Prickly Heath, *Pernettya mucronata*, is another pretty plant for a cool conservatory. It has a shrubby form, with small stiffleaves somewhat resembling those of an *Epacris*. The flowers are small and white and are followed by numerous berries about the size of large peas, and varying in color on different plants, from pink to dark red, or sometimes almost black. This *Pernettya* is, perhaps, more difficult to handle successfully than the species previously noted, but it is quite worthy of the extra effort that may be required during our hot summers to keep it in condition.

Holmesburg, Pa.

W. H. Taplin.

Eremurus robustus.

OF the genus *Eremurus* I have practical knowledge of the species *robustus* only, but my experience with that has been so satisfactory that I long to know every one of them and have taken steps to that end.

My plant came from Dammann & Co. in the shape of a tuber with six fleshy arms or prongs, all in the same plane, and much resembled a star-fish. It was about two inches in diameter. The purchase was made in the summer of 1891. As I knew nothing of its hardiness I planted it, in November, in a cold frame and covered it with leaves. In the beginning of the following April I removed the covering and was much pleased to find my *Eremurus* already coming up to try the delights of a New England spring. The pushing bud was much unlike a living thing, except in color; it was more like a block fashioned by a carpenter, for so closely were the leaves pressed together that it seemed like a hexagonal prism of wood or stone, with each face cutaway at the tip so as to form a pyramidal end. The plant grew well, and in July died down, as was its nature to do, and when I lifted it in August the root was as much of a star-fish as ever, but had attained a diameter of about ten inches. In November I again planted it and concluded not to risk breaking it by another removal. Those who have watched long for the blooming of a plant of whose beauty they have heard much can imagine my pleasure at finding a blossom-shoot appearing among the green leaves when they opened out last April.

The stalk grew rapidly, so fast that I almost fancied that I could see an increase in its height day by day. It finally reached a height of six feet and seven inches—the flowers occupying the upper thirty inches. The first bloom expanded on the 29th of May, and in spite of the dry weather the spike was not through with its display for three weeks. The flowers were of the tint of a peach-blossom and were nearly two inches across; the whole number of them was 246. It grew in such a position that it was seen by a person approaching the house against a dark green background of Cedars, and it was, on the whole, the most admirable thing I have had for many a day. Thirty-nine of the flowers set seed—the seed-vessels being of a spherical shape—and as they ripened assuming an upright position so that their axes were at right angles to the stalk of the flower which produced them. On the 23d of July all were ripe, and I at once sowed the seed. To-day, August 26th, several of the seedlings are three inches high, while others are coming up.

Canton, Mass.

W. E. Endicott.

Kniphofias.

SOME two years ago we were favored with two packets of Herr Max Leichtlin's own hybridized seeds of these Torch Lilies, and though some flowered last year, the majority are in bloom for the first time this season. We have heard a good deal lately of the advances recently made by this noted raiser of choice hardy plants in the varieties of Kniphofia (Tritoma), and those now in bloom here go far toward illustrating the fact that the old introduced species are surpassed in vigor and beauty by these garden hybrids. There is a species called Kniphofia Leichtlinii, which comes from Abyssinia, and is very different from all other kinds, being deciduous, of dwarf habit, the tube of the flower shorter than usual, and the stamens and anthers being exserted, so as to give the spike an appearance quite distinct from all others. Another peculiarity is that the blossoms commence to expand from the top of the spike down, reversing the order of all other species that I have seen, and it is an advantage, as the spike is fully developed before the flowers begin to open. In the hybrids mentioned a large number are the result of crossing K. Leichtlinii with the older and more robust growers, and we have a distinct gain in every way in larger spikes of bloom and in varied colors. They still retain the deciduous habit, and this enables us to lift and store them in a very small space in the cellar in winter, there being no foliage to keep green. The hybrids with this parentage are easily discerned in fall, for after the first frost the leaves all turn yellow and mature at once, so that the plants can soon be lifted and stored, for in this section none of the family is hardy enough to stand the winter.

The parentage of the other seedlings is difficult to trace, but there are very few poor ones among them all, and some are of great beauty; one especially, now in bloom, has a flower-spike over a foot long, with four side branches, the flowers being of a clear bright yellow, with no red shading, while others are of the brightest possible vermilion-red.

Kniphofias have a distinct place in the flower-borders that they are well qualified to fill. At this period there are few plants in bloom among true herbaceous or hardy plants, the month of August being the poorest of the summer months, and this is when the Torch Lilies begin to come into bloom, and they last until frost has killed all outdoor bloom. In very favorable years we can harvest seeds, but more often they do not mature satisfactorily, but seeds can easily be purchased, and these germinate readily in the greenhouse in spring; the older plants may easily be divided when it is desirable to increase any particular variety, for we have found that seed cannot be relied upon to come true if saved from plants among a mixed collection, the flowers being a great attraction to insects, and in this way they become crossed.

South Lancaster, Mass.

E. O. Orpet.

China Asters.—Of the many varieties of these flowers now catalogued it is difficult to choose which to grow, for the list is lengthened every year and becomes the more embarrassing to the cultivator. This season we have tried for the first time the strain known as Giant Comet, and it has proved to be the best novelty in China Asters which has lately been offered. The colored varieties are not as large as the white ones, which are of such unusual size that they resemble a good large chrysanthemum, the centre petals being narrow, almost thread-like, while the outer ones are broad and of good substance. The stems are long and may be cut for use in large vases, and for this purpose this strain cannot be excelled. Another variety we have tried this year is Semple's strain, which is most distinct in habit, taller and more vigorous than any I know, the plants growing nearly three feet high and the stems long in proportion. The large flowers of those we have are all of a pleasing shade of pink, the petals twisting and somewhat incurving very like what is called a Chinese chrysanthemum. These two kinds are genuine acquisitions to our list of summer flowers and well worth growing in any garden.

Boston, Mass.

P.

Dewberries.—Repeated experiments with these plants lead me to discard them from any extensive culture. The only suitable method of growing them is to tie them to stakes five feet high, and cut them in repeatedly during growth. Any approximation to freedom not only makes them a nuisance, but prevents the yield of any fruit that is worth gathering. At the best, the plant tends to produce a larger proportion of knotted stubs in place of perfect berries. The lower limbs are dragged into the dirt by the weight of the fruit. A small plot of the Dewberry Lucretia can be used to decided advantage. Mulch around the plants during the bearing season, and lay them

down for winter. The berry ripens two weeks ahead of the erect-growing blackberries, and sells for a good price. The average price is about fifteen cents; of blackberries, about eight.

Clinton, N. Y.

E. P. P.

Correspondence.

Prickly Lettuce and some other Weeds in Iowa.

To the Editor of GARDEN AND FOREST:

Sir,—Some alarm has been felt in the west from the invasion of Prickly Lettuce (*Lactuca Scariola*). The date of the introduction and distribution of many of our foreign weeds over the United States will never be known, since botanists have, as a rule, not recorded the time of their first appearance. In the case of Prickly Lettuce, Russian Thistle, Spiny Nightshade, Hawkweed, Mexican Poppy, Cone Flower and some others, the local floras furnish data of the time of their introduction, but in the great majority of cases we know nothing.

The records for Prickly Lettuce and Russian Thistle are very full and complete. Prickly Lettuce was recorded by Dr. Gray (*Manual*, fifth edition, p. 281), in 1867, from Cambridge, Massachusetts. Since then numerous botanists have recorded its presence from the Atlantic states to Minnesota. It was a common plant in Madison, Wisconsin, in 1884, and I saw it abundant in the streets of north Chicago in 1885 and in St. Louis in 1886. I have, therefore, been interested in watching the plant in Iowa since 1889. At that time the weed occurred in the streets of several Iowa cities and villages, but was not abundant. Since then it has spread rapidly, and now occurs in every city I have visited during the last year. It is abundant, not only in vacant lots, in streets and along roadsides, but occurs in lawns, pastures and in woods. The weed is thoroughly naturalized, and many farmers and gardeners in Iowa believe it to be one of the worst they have to contend against. In lawns, while not as bad as Dandelions, it causes great annoyance. Many annual weeds are easily destroyed when cut off close to the ground, but this weed cannot be killed in this way, unless the root is cut at least an inch below the surface.

Prickly Lettuce has probably been adventive in Iowa for many years longer. It is recorded by Dr. Bessey (*Report State Ag. Coll.*, iv., 110) as occurring at Ames in 1871. In all probability it was adventive in many other parts of the United States. This fact indicates that it takes some time for a plant to become naturalized, but after it is naturalized it is able to spread rapidly. I have known of large patches of Ox-eye Daisy, *Chrysanthemum leucanthemum*, in western Wisconsin that have disappeared entirely without any effort. The same weed has been reported at Ames at different times since 1871, but it has not made much progress. Dr. Bessey, in 1871, states in relation to Squirrel-tail Grass, *Hordeum jubatum*, that it is "found along railroads; perhaps introduced." There is scarcely a town or city in Iowa where it does not now occur, seriously crowding Blue Grass in lawns. Sweet Vernal Grass, *Anthemum odoratum*, introduced in 1871, has extended but little. Spiny Nightshade, *Solanum rostratum*, though known to occur as a troublesome weed in the south-western states for many years, and during twelve or fifteen years in south-western Iowa, has been reported to me from a dozen or more localities in central and northern Iowa. It is not, therefore, making rapid headway. The Mexican Poppy, *Argemone Mexicana*, has been reported to me from southern Iowa, and I have seen it in Cedar Rapids.

From these and other observations we may conclude that annuals with ready means of dissemination are distributed more widely and are more easily naturalized, and naturalization takes place more readily in the case of European than American weeds. In this I do not consider weeds like Purslane (*Portulaca oleracea*), Plantains (*Plantago major*), Knotweed (*Polygonum aviculare*) and similar species that follow man.

Iowa Agricultural College, Ames.

L. H. Pammel.

The Kentucky Coffee-tree.

To the Editor of GARDEN AND FOREST:

Sir,—In your number of August 15th, Mr. E. P. Powell recommends the Kentucky Coffee-tree for ornamental planting. It has all the good qualities he mentions, but probably he has never observed what happens when one of these trees is cut down. The ground is then filled with innumerable suckers. These are easily disposed of by the scythe, but they seem to indicate that the superficial roots spread enormously and

take a great deal from the soil. I can testify from an experience of many years that this habit of suckering is confined to trees which have been cut down. The suckers appear a hundred feet from the stump. This seems to show that the tree is one of that kind that has innumerable adventitious buds in the roots, which at once sprout when the trunk is cut off. Like the Sassafras, it will renew itself at once if permitted, and with wonderful rapidity.

Philadelphia, Pa.

R. C. McM.

Hovenia dulcis.

To the Editor of GARDEN AND FOREST:

Sir,—In reply to Mrs. Dandridge's inquiry about the fruiting of *Hovenia dulcis*, I would say that some five years ago fruit of this plant was received here from the nursery of the late W. D. Brackenridge, Govanstown, Maryland, where a plant had been fruiting for several years. The large specimen tree on our grounds is in fruit now, as it was last year.

Germantown, Pa.

Joseph Meehan.

Meetings of Societies.

American Forestry Association.—II.

PROFESSOR F. H. KING, of the Wisconsin Experiment Station, gave an illustrated account of some observations on the destructive effects of winds and the protection afforded by woodlands and shelter-belts. Without quoting the tables, we give the leading points of this instructive paper:

WIND-BREAKS.

We have in Wisconsin large tracts of land with soils of a light sandy character which give fair yields of excellent potatoes, but the clearing of these lands in large fields has disclosed the fact that they are liable to serious injury from the drying and drifting action of the winds.

After a rainfall of three-fourths of an inch on the 5th and 6th of May last the fields in one of these sections which was visited on the 7th had already drifted badly, and on the morning of the 8th the top soil, loosened by harrow, seeder and drill, had been so completely driven from many fields as to leave the grain kernels entirely naked, with the plants lying flat upon the ground, hanging by their roots and whipping in the wind. In many other fields, where the drifting had not been so bad, the Oats, which at the time stood about eight inches high, were cured like hay close to the ground, and even the leaves of Dock Sorrel, which in places stood among the grains, were blackened and so dry as to crumble in the hand. Some exposed eighty-acre fields of grain seeded to Clover were about ruined, the loose soil having been removed so entirely that the marks of the bottom of the shoe-drill could be seen over entire acres of ground. But the point to which special attention is invited here is that wherever a field lay to the leeward of any sort of wind-break the destructive effects of the winds were either wholly avoided or they were greatly reduced. It was found that even Grass-fields and fences lying to the west and north of grain-fields had, without exception, exerted an appreciable, and sometimes very marked, protective influence.

After making these observations the influence of the woodlands and wind-breaks upon the rate of evaporation to the leeward of them was investigated with modified Piche evaporimeters. The first set of observations was made on a piece of ground planted to Corn lying to the south of a grove of Black Oaks having a mean height of twelve to fifteen feet. By setting the instruments at different distances from the belt of trees it was found that there was little difference in the rate of evaporation at points less than 120 feet away; but at 120 feet the rate of evaporation was 17.2 per cent. greater than at twenty feet. Little difference was found in evaporation at distances of 280, 300 and 320 feet, but the mean evaporation at these three stations was twenty-four per cent. greater than at the three nearest ones.

On May 31st another trial was made to the south of a Black Oak grove eighty rods square, where the trees averaged, perhaps, fifteen to twenty feet in height, and the instruments showed an increase in the amount of evaporation until a distance of 300 feet was reached, but beyond that limit the rate became constant. At 300 feet the rate of evaporation was 17.7 per cent. greater than at 200 feet, and 66.6 per cent. greater than at twenty feet from the woods.

Trials were also made to the leeward of a very scanty hedgerow, and of a Clover-field—the hedgerow being a strip of Blue Grass sixteen feet wide, in which there were scattering

Black and Bur Oaks from six to eight feet tall, but the distribution of these was so irregular that there were many open gaps of twenty to forty feet. The Clover-field lay adjacent to and west of the Potato-field and bordering the Oat-field on the north, and had a width across which the air passed before reaching the instruments of 780 feet. Here again the observations showed an evident influence upon the rate of evaporation exerted by both the Clover-field and the hedgerow—the evaporation at 300 feet away being about 30 per cent. and 40 per cent. greater than at twenty feet distant from the hedgerow and from the Clover respectively.

In view of the observations here presented it appears to me that we have a case in which both the reservation of forests and the planting of trees may be urged as an expedient, not only for increasing the immediate crop-production, but for maintaining at a smaller cost a fair degree of fertility for the soil. In our state and in parts of northern Michigan we have had large tracts of land, which, owing to the small natural water capacity of their soils, are, when unaided, on the verge of barrenness, and yet which are capable of producing remunerative yields of potatoes and of other crops which mature with a relatively small amount of water; but I feel confident that the tendency of these soils to drift and to suffer from drought makes it expedient, if not necessary, to hold portions of these tracts in forests. The observations here presented lead me to feel that were these lands to be cultivated in narrow north and south fields, leaving belts of timber, and even planting them when necessary, primarily to break the force of the wind and to increase the relative humidity of the air which passes across the fields, the total agricultural output might easily exceed what would be possible were the whole surface cleared and tilled, unless irrigation is resorted to.

Then, again, nearly the whole timber district of the northern half of our state has now been so thoroughly deforested by man, fire and winds that the near future must witness a large influx of agricultural population. Indeed, large land-owners already have agents in Europe negotiating the establishment of colonies within our borders, and one early colony of Finns has been so planted on the shore of Lake Superior. If anything is to be done in the direction of forest-reservations, therefore, steps to that end should be taken at once.

Recent Publications.

Practical Botany for Beginners. By F. O. Bower, D.Sc., F.R.S. Macmillan & Co., New York.

The natural way to study botany is to begin with the common phenomena of plant-life as they present themselves to the senses and by observing and comparing them, to get some idea of their alliances, so as to classify them from their outward appearance and most conspicuous characters. These external and visible relationships between plants are always paralleled by inner or more recondite resemblances in cell-structure, which are revealed by the use of the microscope. It is the fashion in some cases to begin the study of botany now with the microscope, and to proceed from a study of the cell outward. To us this has never appeared to be the rational method. Of course, no one can know botany or any other branch of biological science without careful laboratory work, and when investigations of this sort are undertaken instruction is needed about the necessary apparatus, the preparation of material, the adjustment of the microscope, and all that. This is in reality elementary work of one kind, and it is eminently practical work, and when it is begun after some knowledge has been acquired of systematic botany, as it is generally understood, it is most fascinating as well as useful. This little book is an attempt to guide novices in their first steps in laboratory work. It begins with a list of the apparatus required for ordinary investigations; explains the methods of preserving material, with directions for cutting sections for mounting, etc., and then gives some practical exercises in the preparation of material and in the use of common micro-chemical reactions. The main body of the book is taken up with directions for the studying of vegetative organs and reproductive organs of various types. No guide available for elementary work of this sort is better than Professor Bower's, and undoubtedly it will find extensive use in every institution where there is a botanical laboratory.

Notes.

In a late number of the *Revue Horticole*, Monsieur Edouard André figures and describes a new variety of the common Lilac, which has been named *Chamæthyrus*. It is the well-known habit of *Syringa vulgaris* to send up suckers, but in this variety each of the young shoots bears a truss of flowers at its extremity as it issues from the ground, so that it looks as if a flowering branch of Lilac had been cut off and thrust into the ground. This variety is to be sent out by Messrs. Machet & Josen, Chalons.

Mr. Henry Clinkaberry, gardener of C. G. Roebling, Esq., of Trenton, has sent to this office a three-flowered raceme of the beautiful natural hybrid, *Cattleya Hardyana*. The flowers have delicately mottled sepals, and the petals are daintily veined with white. The lip is a bold purplish crimson, the disk being lightly penciled with yellow, and a large blotch of deep yellow, almost orange, on either side. The flowers have a fragrance which, without being powerful, is refined and distinct. The plant came from the celebrated collection of Reginald Young, Sefton Park, Liverpool, and it is certainly one of the best forms of this rare and interesting hybrid. Mr. Roebling's plant now bears twelve blooms.

We publish in another column some facts in relation to cold storage, but it may be added that technically this phrase in the trade means the preservation of a temperature ranging from twenty-eight to thirty degrees, Fahrenheit, upward. For freezing there are special charges, and this means a temperature maintained from twenty degrees, Fahrenheit, downward. The softer small fruits, peaches, plums, grapes and pears, allow a range of no more than three degrees, that is, from thirty-three to thirty-six degrees, while apples can be kept to advantage at a lower temperature, and lemons and oranges do well at from thirty-eight to forty. Great care is taken to secure constant and equable temperature by different automatic systems and by regular and registered visits of watchmen.

As we have already reported, the European apple-crop is almost a failure, and large exportations from this country may therefore be looked for. Two thousand barrels were sent away last week, and more than twice that number will, no doubt, be forwarded during the present week. Inasmuch as there is not a full crop in Canada, and since the product of the United States will not be half that of an average year, it is fair to assume that prices will be high. In fact, the prices in England are already good. A few careless or unscrupulous shippers have done very much to injure the American export apple trade by sending inferior or badly packed fruit, and this tends to give a bad name to the entire supply from this side of the Atlantic. Newtown Pippins were always favorites in the English markets, but they have lost their position to some extent, owing to the fact that other green apples have been shipped from this country and falsely branded as Newtown or Albemarle Pippins. Red apples, such as Baldwins and Kings, now bring the highest prices.

Last year we published a complaint that Dahlias in certain sections failed to bloom, the buds seeming to dry off entirely or make imperfect blossoms only. This trouble is prevalent again this season in many places, and Mrs. W. Seliger writes from Hartford that she has discovered the cause to be the work of the common corn-stalk borer, *Gartyna nitela*. The moth of this insect is dark brown, sprinkled with yellowish dots, with a whitish band across the wing, and the caterpillar is dark brown, with three white lines on the back, the central one being continuous, while those on each side are interrupted. This borer drills into the stalk near the ground and eats out the pith, causing the death of the plant. The method generally suggested for fighting the insect is to pull up the injured corn-stalks as they begin to wilt, and feed them to the pigs, so that the worms will be destroyed. If this is carried on regularly there will be little danger that the moth will become so abundant as to be a serious pest. When it occurs on weeds or garden-plants these ought to be collected and fed to hogs or burned. Last year it was suggested by Mr. Slingerland, of the Cornell Experiment Station, that the four-lined leaf-bug, *Pœcilopsus lineatus*, was the offender, and the fact that this insect attacked Dahlias had been put on record by Dr. Fitch thirty-six years ago. This leaf-bug punctures the flower-bud until it withers. A bulletin published by the Entomological Division of the Cornell Experiment Station last year gives all the facts known about this pest, and a summary of the methods of guarding against its attacks will be found in this journal (vol. vi., page 500). We should like to know whether

the corn-stalk borer has been detected preying upon Dahlias in other sections.

To a correspondent who inquires of *The Rural New Yorker* whether it would be preferable to pick Maiden's Blush and Baldwin apples two weeks earlier than the usual time, so as to save loss by storms, etc., some interesting replies are made by experts. Dr. Hoskins states that apples will not wither if picked at any time after the seeds are colored. Usually the skin colors with the seed, but not always. Secretary Gold says that on the hills of northern Connecticut apples are safe on the trees till the middle of October, and improve in color, quality and size enough to compensate for the few that are blown off by winds in August and September while they are too green to pick. This year the extreme drought will cause apples to loosen earlier, and they should be watched and picked in season. Mr. J. S. Woodward says that apples picked when quite green will keep longer than if left to hang later on the trees, although they will shrivel slightly. The flavor will be injured, however, so that, on the whole, the practice is not a good one. Some persons have an idea that winter apples which hang on the trees after they are ripe will keep longer, but this is not the case, and the sooner they are picked after the seeds are entirely black, and put into a cool temperature, the longer they will keep. With early fall apples it will pay to go over the trees more than once, for if the large and mature apples are picked as soon as ripe the less-developed ones which are left hanging will often double in size. This is true of Duchess of Oldenburg, Sweet Bough and Maiden's Blush, and the larger yield will often more than compensate for the extra labor, to say nothing of the escape of risk from winds. Another correspondent asserts that when apples are picked as soon as they reach full size their flavor is improved, and they have less tendency to rot, while George T. Powell says that apples should be picked as soon as the stem will loosen from the branch without breaking. This year apples can be picked two weeks earlier than usual. The best keeping quality is obtained by picking the fruit as early as possible, and the finest flavor is insured by allowing them to reach fullest maturity on the tree. If the stems adhere and break the fruit will wilt.

Among the tropical fruits now exposed in the fancy-fruit shops are mangoes from the West Indies, and, judged by the specimens here, one wonders at the reputation they enjoy at home. The fact is that the varieties of mangoes differ from each other almost as widely as those of apples, and in most tropical countries little care has been taken to select choice kinds, so that it is only by a rare chance that a mango of high quality ever reaches this city. They retail at five cents each, and alligator pears bring \$3.50 a dozen. Importations of bananas have slightly increased each succeeding month since early spring, and in August 600,000 bunches came into this city at prices fifteen to twenty per cent. lower than those obtained in July. Jamaica oranges are becoming abundant, and the later shipments are more nearly ripened than the first lots which began to come nearly a month ago. Most of this fruit comes packed in barrels holding as much as two and a half Florida orange boxes, and sells at wholesale at the low price of \$2.50 a barrel. The first Florida oranges are looked for here by the end of September. Some Indian River russet oranges, juicy and of good flavor, said to be Hart's Late, are still offered at sixty cents a dozen, fresh Rodi oranges bringing the same price. The plums now coming from California are larger and more showy in color than those seen here a month ago, and Kelseys and Gros prunes are now almost as brilliant as the Hungarian prunes. Choice selected boxes of five dozen sell for a dollar. Seckel pears range from twenty-five to fifty cents a dozen for the best, according to size. Mammoth, Buerre Hardy and Bartlett pears, and nectarines of very large size and high color, bring sixty cents a dozen at retail, smaller fruit of the same sorts costing a third as much. Grapes are now here in greater variety than any other fruit. Besides the kinds of domestic grapes noted last week, California is now sending Rose of Peru, or what is sometimes known as Black Prince, good-sized, firm, round berries, clustered loosely in large bunches, and not considered one of the best grapes for long shipment. The yellow-green Chasselas de Fontainebleau, or Sweetwater, is quite abundant in our markets, which, while juicy and sweet, lacks distinct flavor. Black Sultana and Thompson's Seedless, a local variety of the golden-yellow Sultana, are also here, and the later Verdel, having oblong yellowish green berries, covered with an attractive bloom. So plentiful and cheap are the California and New York state grapes that Muscat of Alexandria, Chasselas and Black Hamburg grapes from Long Island hot-houses command but thirty cents a pound for the best.

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Forestry in the Constitution of the State of New York.

THE conviction that it is a public duty to take positive measures for preserving our forests is certainly becoming more strong and general. This is demonstrated by the fact that a body of representative men like those assembled in the Constitutional Convention, now sitting in Albany, have appointed a special committee to make some provision for the future of the forests of the state in its organic law. Not only has such committee been appointed, but it has proposed an amendment to the constitution, which has now been advanced to a third reading, and provides that all the lands of the state which have been taken or shall be acquired as a forest-reservation shall be forever kept as wild forest land; that they shall never be leased nor sold, and that no timber thereon shall ever be cut or sold. The adoption of such an amendment would certainly put a stop to some evils which we have deplored. We have stated in these columns that the policy of the present commission which encourages the selling of standing Spruce above a certain size is vicious in its essence, and that if carried out it will work the ultimate ruin of a large portion of the forest-cover. But we also believe, and we have so argued, that a comprehensive and systematic plan of forest-management can be devised which will permit the cutting of trees without interfering with the value of the North Woods as conservators of the water-supply, which is, without doubt, their most important function in the state. We hold that no necessity exists for sacrificing the value of the forests in one direction in order to preserve their value in another. The absolute prohibition of cutting any wood from the state preserve means actual and reprehensible waste. Experience has proved, beyond question, that under proper management a forest can yield its products which are indispensable to civilized men, and can even grow in productiveness every year, while its beneficial influences on soil, climate and water-supply will remain wholly unimpaired.

Against this position it is argued that while the state forests might be maintained both as a source of timber-supply and as a protective cover for the watershed under an

ideal management, as a matter of fact no such management can be hoped for while legislatures are constituted as they now are, and the only way to keep the woods from destruction is to forbid altogether the entrance of the axe. And there is, it must be admitted, ground for apprehension in this respect. As we understand the laws now existing, the state forests are soon to be handed over to the charge of the so-called Agricultural Department, which is generally considered more dangerous and inefficient than are the present administrators. But, after all, somebody must be trusted. In spite of constitutions and laws, our faith must ultimately rest upon the intelligence of the people and their ability to select agents who will do their will. There is no justification in reason or in morals for preventing the people of the state from using what is their own from fear that they will fail, through ignorance or greed, to use it to the best purpose. It is true that our forests have been shamefully abused; that we have wasted much more than we could use, and that even now there is no adequate recognition of their real value among the people. The members of the Constitutional Convention must admit, however, that they, as individuals, have learned to appreciate them thoroughly. They are permitted to hope, therefore, that the people and their representatives in the Legislature will in time become educated up to the same level. Until this time arrives the woods will not be safe even under the protection of a new constitution. Without an enlightened public sentiment which operates directly on the administration of the forest, the same waste, the same robbery, the same destruction by fire will continue in spite of statutes.

It is gratifying to know that the American Forestry Association, a body which has been criticised sometimes for having a sentimental dread of tree-cutting, unanimously condemned the proposed amendment at their meeting last week in the White Mountains. The reasons for their protest against this amendment seem to us entirely sound. In the first place, a constitution lays down the broad policy upon which all legislation must be based. It is a declaration of principles which are to endure while laws in conformity with them are enacted, amended and repealed in obedience to temporary demands. It is plain, therefore, that organic law should not descend to specifications; at least, it is plain that it should not prescribe methods of technical management. It is not the function of a constitution to hamper legislation, but to give it scope and efficacy. But if we grant that the regulation of forestry practice is proper subject-matter for such an instrument, we must admit that here, if anywhere, such a subject should be treated broadly and in accord with scientific truth. Now, this proposed amendment ignores the fact that there is, or can be, any such thing as rational forest-management. One would infer from the declaration of the constitution makers that the interest of the people and of the lumbermen are inevitably at war with one another, whereas the lumberman, as much as any other man, has an interest in good forestry, and it is to no man's ultimate advantage to allow forest-products to go to waste. This certainly is a serious misconception of the true relation of the forest to civilized society, and it would be a grievous error to embody such a doctrine in a state constitution. The cause of forestry is not advanced, but hindered and hampered, by the dissemination of such false notions.

It hardly needs to be stated that we are not advocating the use of the axe, except under skilled control. Not a tree should be cut until some forward-looking and well-considered forest-policy has been adopted, and some plan of forest-management based on scientific principle has been assured. There are men in this country with sufficient skill and experience to devise such a plan and to carry it forward into successful execution. The North Woods, from their constitution and situation, are admirably adapted to proper forest-management, and it would be a calamity if this was prohibited. We see no more reason why the state of New York should prohibit forever the cutting of its forest-trees than that the same absolute prohibition should

be made on the national domain. Thoughtful people are more and more impressed with the necessity of protecting our forests, and the more widely their manifold uses are realized the stronger will be the desire of all the people to foster them. The spectacle of a great forest yielding out of its abundance nothing except a thin layer of fertility to the soil every year is not an improving one. Letting it out in five-acre patches to campers who can pay for such privileges is not using it to the highest general advantage. The spectacle of wasted timber is as demoralizing as the spectacle of any other public property destroyed. The North Woods, managed by competent foresters, would do much more than yield a little revenue to the state. They would serve as an object-lesson of incalculable value and do more to correct the opinions and direct the purpose and practice of the people at large in matters pertaining to forest economy than volumes of essays on the subject by amateurs. True, we cannot hope that such a management will be organized at once; but we ought not to lose faith in its possible coming. At all events, it is not the part of wisdom to try to prevent or delay its coming by constitutional enactment.

Irrigation in City Parks.

THE visitor to Central Park in these days will hardly be surprised to see, after the long period of drought, that the leaves are dropping from shrubs and trees, and that many of the open spaces show no trace of that peculiarly refreshing green which a stretch of well-kept turf alone presents. Most of the trees and shrubs will recover, although the foliage of some of the trees which stand on a thin layer of soil spread over solid rock has more than a merely ripened and dried appearance, and looks as if it had been actually scorched by a fire. But even if the fall rains suffice to revive the grass, and if every tree and shrub should push forth its leaves next spring as vigorously as if it had not gone through the fiery trial of such a July and August as we have just passed, the fact remains that the park for something like two months has been far from furnishing its full possible measure of delight to the eye and to the imagination. That is, the park has lost a great part of its attractiveness for one-third of the growing season of the year.

Now, all this could have been prevented by irrigation. The simple application of water in sufficient quantities would have kept every lawn smiling and every thicket and wood-border in full verdure the whole summer through, and in such a season as this, when all the country is parched brown, this stretch of greenery in the midst of the city would have been doubly refreshing. Spaces of smooth green turf are essential elements in every pastoral picture; and since the city has gone to the enormous expense of blasting down rocky ridges and covering them over with mold to make these green fields, it is a shameful waste to allow their beauty to fade away just when it is most needed. Of course, few summers have ever been as trying as the one we have just passed, but almost every year the park meadows are dead and brown when they should be clothed in living green. For some unknown reason, park commissioners and apportionment boards can never be made to realize the necessity of watering and fertilizing in a park. They will vote money for building new entrances or new bridges, or for any amount of construction, but they are seized with a fit of economy whenever it is suggested that the health and vigor of the vegetable life in a park must be provided for; and yet upon the richness of this life the beauty and usefulness of a park primarily depends.

The lower portion of Central Park, which was constructed first, was partially provided with facilities for watering, and here are many irrigated spots and strips which show how delightful the whole park now might be if it had all been similarly treated. Liberal apportionments have been made for park maintenance in some directions. The newly graveled roads seem as good as roads can be

made. The borders have been freshly turfed, their edges trimly cut, and the carts which sprinkle the roadways have also moistened them until they are nearly perfect. But the little patches and streaks of green, where water has been applied, only serve to emphasize the dreariness and death by which they are surrounded. In the northern part of the park, where there are no facilities for watering, except immediately along the roadways, there are whole acres where no grass can be seen, and on the lawn-tennis ground, in spite of the fact that it is watered by carts as much as possible, the players actually raise a dust in running over the so-called turf. Of course, the trampling here helps to kill the grass, but on the baseball ground, where games are played twice a week, the sward is green, because there are facilities for watering it partially. As an evidence of the beneficent effects of irrigation one has only to glance at the chain of small parks in Fourth Avenue, where the shrubs are holding all their leaves and the grass is a vivid green even on the thin soil over the tunnel. On the other hand, Morningside Park is a picture of desolation which it is painful to behold. A feeble attempt at watering the lower portions of this park has been made by attaching hose to one of the city hydrants far beyond the limits of the park, and last week we saw several men doing the best they could with a reach of hose a thousand feet long. But this is slow and ineffectual work, and it is a wonder that any of the shrubs on the rocky slope are alive.

Now, the lesson of all this is that no city park ought to be called finished until adequate provision is made for watering every inch of it. Central Park needs from thirty to forty thousand feet of piping under the ground to supply its present deficiencies, besides fifteen to twenty thousand feet of rubber hose. With such a plant a very small force, working systematically, could do effectively what four times as many men are now trying to do and making an utter failure. It is easy to see how large an area one man could attend to regularly and systematically if he had the proper machinery, and how in this way a perfect record could be kept showing just when a given space had been watered, and just how much was given to it. There may have been some excuse for dribbling out an inadequate water-supply to the parks when water was said to be scarce, although there seems no reason why the city should not deal with the parks in this respect as liberally as with any similar area in its thickly populated portions. There is no lack of water now, however, and there is no one thing that Central Park and Morningside need so much as proper facilities for applying it.

The Minnesota Forest Fires of September First.

INASMUCH as I have been moving about through the forest here all summer, and especially on the 1st of September, when the disasters culminated in the general outburst, it seems my duty to make a statement of the conditions under which it occurred.

Ever since fires would first run through the woods last spring settlers have been starting fires to clear land, parties camping in the woods have permitted fires to escape them, cinders from locomotives have been kindling fires along the railroads. Owing to the prolonged drought, but few of these fires had become entirely extinct, but had lingered in stumps, logs, muck and peat, creeping slowly through the forest, killing trees over wide areas, and extending their frontage until there was hardly a district in the wooded and the inhabited region that did not have a fire burning somewhere within it. All the dead material in the forest had become so dry that when pulverized and sprinkled over a flame it would ignite with an explosive flash like gunpowder.

Besides the dry material in the unburned forest there was a vast amount of charred and tinder-like matter, scorched by previous fires. To this add the dry leaves of the trees that had been killed, and conditions were at hand for the general outburst that occurred soon after noon of September

ist, when the hot dry wind that had been blowing all day from the south-west increased to a gale, and in some localities became a hurricane. The air was filled with combustible dust and the gases distilled by smouldering fires, so that to the smallest burning leaf or twig on a tree-top a great flame seemed attached, and large masses of flame would often break away from all contact with fixed material, whirl through the air for long distances and ignite the leaves in other tree-tops so quickly that it seemed almost a spontaneous combustion. Nothing that could burn was safe within half a mile of the forest, as was proved by the burning of villages, railroad-trains, cross-ties in the track, and the loss of many human lives.

The number of persons killed is at this date, September 3d, impossible to ascertain, but will possibly reach a thousand in Carlton and Pine counties. Thousands of cattle have also perished, millions of acres of timber have been killed, an inestimable amount of timber and lumber have been burned, and the promising growth of young forest and its valuable influences have been destroyed. The latter item is usually not considered or is placed at a very low value, but in far-reaching and true economy it should rank next to the loss of human life.

The entire disaster was due to man's ignorance, carelessness and viciousness, and was, therefore, preventable by instruction, caution and coercion.

Carlton, Minn.

H. B. Ayres.

Foreign Correspondence.

London Letter.

RHODODENDRON FORDII.—This is a new species from Lantao Island, Kwangtung, China, having been discovered and introduced by Mr. Ford, the superintendent of the Botanic Garden, Hong Kong, after whom it was named, and described in the *Kew Bulletin* by Mr. Hemsley in January last. It is related to *R. Fortunei* and has dark green leathery obovate leaves, three inches long, clothing woody branches, which are terminated by loose clusters of five-lobed ten-stamened flowers two inches across. It is likely to prove hardy and promises to be a useful addition to the Chinese representatives of this genus in cultivation.

SAINTPAULIA IONANTHA.—I again refer to this delightful little African Gesneriad to recommend it for its free growth and free-flowering character in an ordinary stove, and also to inform your readers that it is easily multiplied by means of leaf-cuttings. Every leaf put in now will form a good plant by next summer.

SCUTELLARIA FORMOSANA.—From what I know of this new species there is little chance that it will ever justify its description as a good plant for decorative purposes. It is a native of Formosa and has been introduced by Messrs. J. Veitch & Sons, with whom I saw it in flower a few days ago. It has straggling stems a foot long, ovate leaves nearly two inches long, and terminal erect racemes, four inches long, of slender tubular flowers an inch long, colored blue and white.

DRACENA GODSEFFIANA.—Having flowered and fruited, this plant has been accepted by Mr. Baker as a good species allied to *D. surculosa*, with which some authorities last year tried to prove it identical. It is a distinct plant, at present only a foot high, with obovate cuspidate leaves three inches long, colored bright green, with cream-yellow spots, suggesting the variegation of *Aucuba Japonica*. The flowers are small and greenish and the fruit is a round berry an inch in diameter, colored rich orange when ripe. It is a native of Lagos.

THUNBERGIA GRANDIFLORA is not a new plant, but it is so rarely grown that a well-flowered example of it, such as may be seen in a stove at Kew, excites as much admiration, even among cultivators, as if it were a new introduction. Planted out in good soil and trained along the rafters so that finally its shoots can down-hang a yard or two, it becomes a picture of great beauty when the flowers, borne in axillary clusters, hang as thick as bunched

onions. Each flower is three inches long and broad, and its color is lilac-blue, paler in the throat. There is also in flower at Kew a variety of it with pure white flowers. The type was introduced from India, where it is a native, in 1820, but the variety has only recently been introduced to Kew from Calcutta. We have no better stove climbers than these two, nor any more easily cultivated.

STREPTOCARPUSES.—These plants are being greatly improved every year under the skillful cross-breeding and selection of Messrs. J. Veitch & Sons. This year their seedlings are beautiful, much finer than any hitherto produced, the range of color being greater and the size of the blooms larger; moreover, the plants have well-balanced leafage. Some of the seedlings have flowers of the clearest rose-red, with dark pencilings in the throat, one seedling in particular being of the clearest crimson color. There are numerous variations among the whites, purples and blues. Messrs. Veitch grow these plants in thousands, planted out in a large lean-to frame facing south. They seed freely, and the seeds are mixed and sold so that a packet would contain all the colors at present raised. The great value of these *Streptocarpuses* is in their thriving well and flowering freely in a stove, intermediate or cool greenhouse. They are better planted in a border than when grown in pots.

FUCHSIAS AND TUBEROUS BEGONIAS.—One of the most attractive houses in the Veitchian nurseries at Chelsea is filled with Fuchsias and Begonias. The Fuchsias are trained along the rafters, which they completely hide with their shoots, and the flowers hang in arch-like festoons over the Begonias, which crowd the stages, and comprise all the colors and all the best forms of these plants. Nothing looks, and nothing is, easier than the production of a display of this kind, and the plants look perfectly at home. Fuchsias are not utilized as rafter or roof climbers to the extent that they deserve. At Kew they are a feature in the conservatory, where they are planted out in the side borders and their stems trained along the rafters up to the ridge. The lateral shoots are cut in hard every spring, and this induces the plants to develop plenty of shoots, which are semi-pendent, and flower profusely.

AN IMPROVED GREENHOUSE.—The gridiron-like stages over rows of hot-water pipes and the red flower-pot are the ugly features of the ordinary plant-house. But these may be improved upon by the adoption of the plan of two houses in the nursery of Messrs. J. Veitch & Sons, one for the display of Orchids when in flower, the other for choice greenhouse-plants. The inside of the house is a series of irregular rockeries and masses of virgin cork forming numerous pockets and ledges, the whole being "toned" with the clinging stems of *Ficus minima*, *Selaginellas*, *Pellionias*, and such like plants, with tufts of Ferns here and there. These form a most effective background to the special things on exhibition, which, although mostly in pots, are cunningly hidden under Fern-fronds, the effect being a perfectly natural arrangement, infinitely more pleasing as a picture than the ordinary house, while each plant is seen to the best advantage. A slight modification of this arrangement would make the best of all indoor styles of gardening, for the amateur, at any rate.

THE TEMPERATE HOUSE AT KEW.—A photograph of the interior of this fine house was published in *GARDEN AND FOREST* in 1892, page 401, and the dimensions and history of the house were given in a note which I wrote to accompany it. Only a portion of the original design was carried out in 1863, when the present house was built, but, even as it stands, the structure is probably the finest ever erected for the cultivation of temperate plants. It has now been decided to finish the house, which will mean an addition equal to about half of its present dimensions, and the cost of which will be £12,000. The total length of the completed building will be 582 feet, and its superficies nearly 50,000 feet, or one and three-quarter acres. It will stand on a terrace four feet high, and will consist of a centre connected with two wings by two smaller octagonal

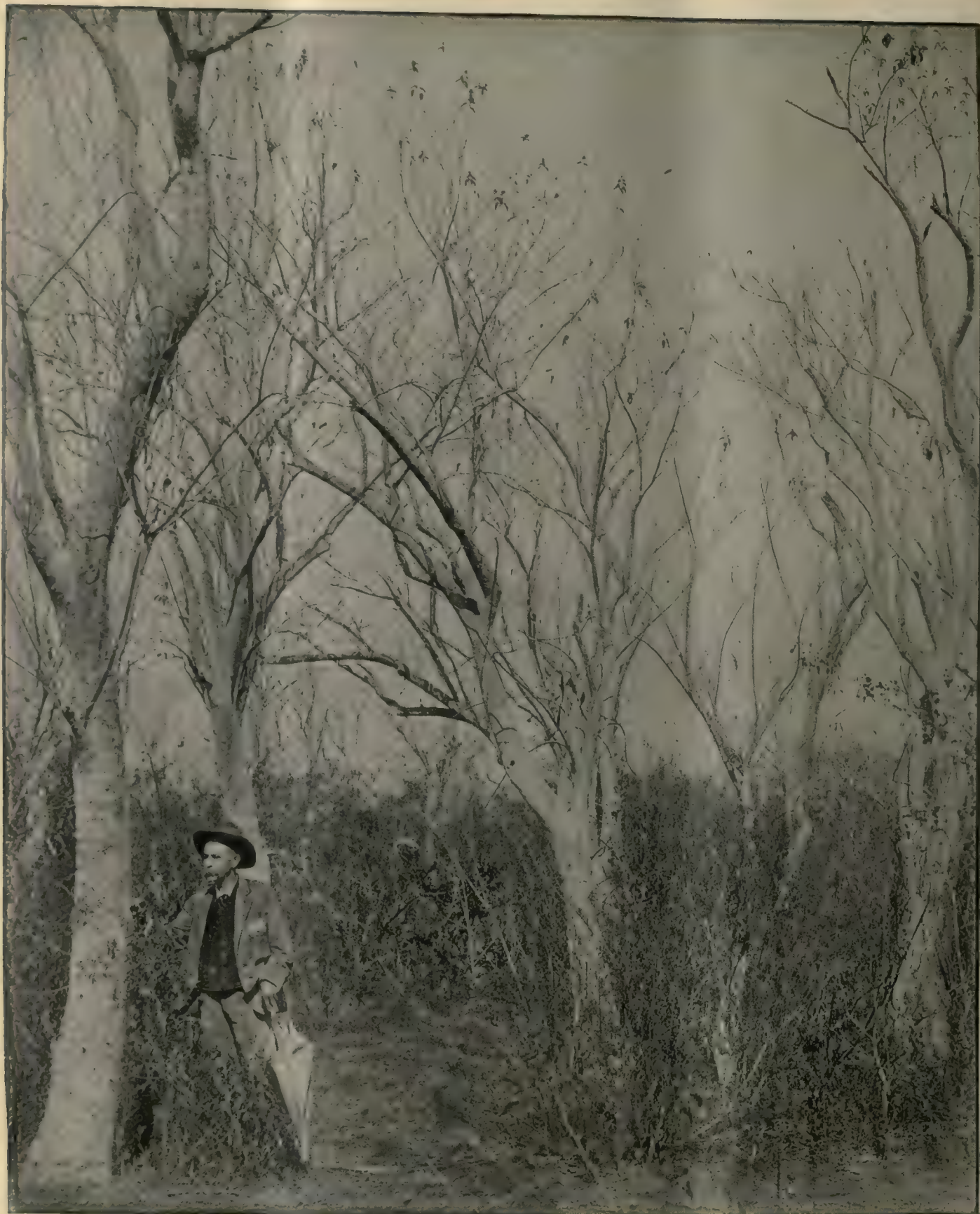


Fig. 58.—A grove of Tree Ipomœas, in Mexico.—See page 366.

conservatories. The new wings are to be devoted to plants requiring an intermediate temperature.

"SYLVICULTURE IN BRITAIN" was the subject of a long and important paper by Professor Bayley Balfour at the meeting of the British Association, held at Oxford last week. He

deplored the neglect of forestry on the part of British landowners, and urged the Government to take up the matter by making an experimental forest, or a series of forests, for the production of timber for the supply of the English market and as a teaching-school of forestry. He pointed out



Fig. 59.—A branch of *Ipomoea Wolcottiana*.—See page 367.

a, flowering branch; b, flower; c, capsule and calyx; d, capsule with two valves removed; e, seed; f, ventral side of the same with coma removed—all slightly reduced.

that, although the foreign supply is sufficient for our needs at present, the time will come when this will lessen. At present British cultivators generally were, he said, in igno-

rance of the science of sylviculture, and, consequently, what little we do now is done badly. On the other hand, it has been demonstrated more than once that to devote land in

Britain to the cultivation of timber-trees for profit, in the face of foreign competition, is as hopeless an undertaking as that of fruit or vegetables on a large scale here.

If it could be clearly shown that there is money in timber-growing in Britain there are hundreds of landowners who would plant up their wasted fields with whatever was likely to be in demand. The few who have good timber for sale now can hardly sell it at a profit. The Government may be induced to make the experiment, but without protection it would scarcely clear expenses. All that science can do is powerless so long as the British market, the best in the world we are told, is open to all comers. For the consumer things are best left as they are, but it is futile to invite the broken-down farmer and landowner to plant Pine and Oak and Ash for wood, or Apples and Pears for fruit, in the hope that the prices he will get for his produce will set him on his legs again. I know one clever cultivator who tried hard for many years to make fruit-growing in England pay, but, although his land was good, he lost heavily on what he now calls his insane investment.

London.

W. Watson.

New or Little-known Plants.

Some Notes on the Tree Ipomœas of Mexico.

DR. EDWARD PALMER has frequently observed in western Mexico groves of the Tree Ipomœas and has several times collected specimens. He has always believed that there was more than one species, but scanty herbarium material has prevented my giving the subject the proper study.

While at Culiacan in 1891, Dr. Palmer procured a photograph of one of these groves, which is reproduced on page 364. These are among the most beautiful flowering trees of Mexico, and being of no commercial value are allowed to grow while other trees are cut out. They, therefore, form a characteristic feature of the landscape. Curiously enough, none of these trees have yet been cultivated, although they ought to be found in our larger greenhouses and in the open gardens of our warmer southern states. I call attention to them, therefore, with a desire that some effort may be made to introduce them into cultivation. Dr. Palmer will soon visit this region again, and it is to be hoped that some arrangements may be made by which small trees or seeds may be sent to this country. He did procure a few seeds in 1891 at Manzanillo, but not being quite mature they did not germinate.

A careful examination of the material obtained by Dr. Palmer in the last few years seems to show three good species of the group. Add to these the well-known *Ipomœa murucoides*, and the introduced species, *I. fistulosa*, gives us five species for Mexico.

IPOMœA FISTULOSA.—This species* was originally described from Brazil. It is reported by Mr. Hemsley as native in Guatemala and Panama, but I am not aware that it is found in Mexico outside of cultivation. It seems to be frequently planted in Mexican gardens, and has occasionally been reported from Texas. Several years ago Mr. G. C. Nealley obtained some seed for the Department of Agriculture, which was distributed. Mrs. H. L. T. Wolcott succeeded in growing several plants. One of these, which she turned over to me, is now growing in one of the Department greenhouses. The plant began to flower when

only a foot high, and the species is, doubtless, an abundant bloomer. Our specimen is now about five feet high, and although it has not since bloomed, this is doubtless due to lack of proper conditions.

The tree is known in Brazil under the names of "Canudo" and "Matta-Cabra."

IPOMœA MURUCOIDES.—This species* is the best known and of the widest distribution of all the Tree Ipomœas. The flower-buds are rather coarse and homely, but the open flowers are large and handsome. I have not been able to learn whether this species is now in cultivation. Kunth, in 1825, speaks of a large tree in cultivation in Spain. The only illustration of the species which I have seen is a colored lithograph in the *Biologia Centrali-Americana*, vol. ii., Tab. 61. The tree is known to the Mexicans by the name of "Guansaguat" or "Cazahute." It seems to be common in Mexico and ranges from northern Mexico to Guatemala.

IPOMœA ARBORESCENS.—The illustration represents the little-known plant first collected by Humboldt in southern Mexico. It was not again reported until Seemann obtained it near Mazatlan. I have seen neither of these specimens, but, through the kindness of Dr. A. Engler, I have had Dr. Palmer's plant compared with the type now at Berlin, who states that "it is identical with *I. arborescens* collected by Humboldt." The plant collected by Seemann is evidently the same as the one obtained by W. G. Wright from Mazatlan in 1888.

Mr. W. Botting Hemsley has also identified Palmer's plant as the *Argyreia* (?) *oblonga*. This plant was collected by Dr. Sinclair some time between the years 1836 and 1842 at Tepic, and described in the *Botany of the Voyage of the Sulphur* under the above name. Our specimens differ somewhat from Mr. Bentham's description, especially as to the habit of the plant, the base of the leaves and the inner surface of the sepals. This may be accounted for by the paucity of his material. Dr. Palmer collected specimens at Alamos in 1890, and both Mr. Hartman and Mr. Lloyd, of Dr. Lumholtz's Archæological Expedition, obtained specimens in the state of Sonora.

This species† ranges along the foot-hills of the Sierra Madre from Tepic to Alamos. The rarity of the species in our collections has been due, therefore, not to the rarity of the species itself, but to the fact that so few collectors have visited this region. The tree grows to the height of six to nine meters (twenty to thirty feet), with a trunk three centimeters (one foot) in diameter. It has a smooth gray bark and numerous branches; the leaves are ovate, slightly cordate at base and more or less pubes-

* *Ipomœa murucoides*, Roem et Schult. *Syst.*, iv., 248 (1819); DC. *Prod.*, ix., 358 (1845); Hems. *Biol. Cent.-Amer.*, ii., 290 (1882); Smith, *Pl. Guatm.*, Pt. 2, 50 (1891); Index *Kew*, Pt. 2, 1246 (1894).

† *Ipomœa murucoides*, H. B. K., *Nov. Gen. et Spec.*, iii., 95 (1818).

I. macrantha G. Don. *Gen. Syst.*, iv., 267 (1838). Large tree: leaves oblong to linear-lanceolate, 7.5 to 12.5 cm. (3 to 7 inches) long, rounded at base, long acuminate, tardily glabrate; petioles 12 to 36 mm. (6 to 18 lines) long; flowers either axillary or in cymose clusters; peduncles, 2.5 to 6.2 cm. (1 to 2½ inches) long; calyx deeply five-parted, clothed externally with white wool; sepals somewhat unequal, 18 to 25 mm. (9 to 12 lines) long; corolla white, large, 7.5 cm. (3 inches) long, with broad throat; stamens included; carpels oblong, 25 mm. (1 inch) long, glabrous; seeds triangular, 10 mm. (5 lines) long, light brown, the angles clothed with long hairs.

Specimens have been examined from the following places: Guadalupe (Blumex, September, 1869; September, 1867, No. 273; Bourgeau, September, 1865-6, No. 790). Mexico, locality uncertain (Dr. J. Gregg, 1848-9, No. 592; Berlandier, November, 1827, No. 1229); Guatemala (Captain John Donnell Smith, February, 1890, No. 1863); Cannibal (W. C. Shannon, December, 1891, No. 417).

† *Ipomœa arborescens*, Don. *Gen. Syst.*, iv., 267 (1838); DC. *Prod.*, ix., 358 (1845); Hems. *Biol. Cent.-Amer.*, ii., 383 (1882); Seemann, *Bot. Herald*, 319 (1856).

Convolvulus arborescens, H. B. K., *Gen. et Spec.*, iii., 94 (1818).

Argyreia (?) *oblonga*, Benth. *Bot. Voy. Sulph.*, 133 (1844).

Ipomœa oblonga, Hems. *Biol. Cent.-Amer.*, ii., 301 (1882).

Ipomœa murucoides, var. *glabrata*, Rose (not Gray), *Contr. Nat. Herb.*, i., 107 (1891). A tree 9 meters (30 feet) high; leaves ovate, 5 to 10 cm. (2 to 4 inches) long, cordate at base, acute, very pubescent at first, but becoming nearly glabrate; petioles 5 to 7.5 cm. (2 to 3 inches) long; sepals oval, obtuse, 6 to 10 mm. (3 to 15 lines) long, pubescent both within and without, in age becoming glabrate without; corolla white, yellowish below, about 5 cm. (2 inches) long, with rather narrow, funnel-formed throat; capsule 30 mm. (10 lines) long; seeds 10 mm. (5 lines) long.

Specimens from the following places have been examined: Sonora, Alamos (Palmer, March 20th to April 8th, 1890, No. 316); Tourbabi (C. E. Lloyd, November 19th, 1890, No. 268); Bacadehuachi (C. V. Hartman, November 19th, 1890, No. 268); Las Durasmillas (T. S. Brandegee, 1892); Mazatlan (W. G. Wright, January, 1889, No. 268).

The following specimens, which I have not seen, belong here: Humboldt and Bonpland type of *Convolvulus arborescens* collected between Acahuoilla and Chilpancingo. Seemann's No. 459 collected on the "road from Mazatlan to Sebastian." The type of *Argyreia oblonga* collected by Sinclair at Tepic.

* *Ipomœa fistulosa*, Mart. in DC. *Prod.*, ix., 349 (1845); Seem. *Bot. Her.*, 171 (1854); Meisn. in Mart. *Fl. Bras.*, vii., 230, t. 81 (1860); Hems. *Biol. Cent.-Amer.*, ii., 387 (1882); Coult. *Contr. Nat. Herb.*, ii., 292 (1892).

Batatas crassicaulis, Benth. *Bot. Voy. Sulph.*, 134 (1844).

Ipomœa Texana, Coult., *Contr. Nat. Herb.*, i., 45 (1890).

A high shrub, perhaps sometimes arborescent; younger parts puberulent, early becoming glabrate; leaves sagittate, acuminate, strongly cordate or sometimes nearly truncate at base, 3.7 to 15 cm. (2½ to 6 inches) long; petioles slender; peduncles shorter than the leaves; cymes single or compound; sepals oval, 6 to 7 mm. (3 to 3½ lines) long, obtuse or retuse, glabrous within, puberulent without; corolla pink, pubescent without, 5 to 7.5 cm. (2 to 3 inches) long; seeds 8 mm. (4 lines) long, covered with long black hairs. Native in Brazil and Peru and extending into Central America; cultivated in Mexico and Texas. Specimens have been examined from the following places:

Texas, Brownville (G. C. Nealley, 1891); Santa Maria (G. C. Nealley, 1889); Mexico, Monterey (Charles K. Dodge, April, 1891); Nicaragua (C. Wright, 1853-6).

cent. The flowers, which are white, are produced in great profusion, and appear before the leaves. The following note has been furnished me by Dr. Palmer:

This tree is one of the most noticeable features of the landscape between Alamos, Sonora, and Sinaloa, Culiacan, especially about the latter place, where it is the tree of all trees seen. A stranger may ask, why there are so few other trees and so many of this. The answer is: This tree cannot be used as timber or for fuel, since it burns like straw. The ashes are sometimes used in soap-making. Thus the tree is left to beautify the country; its smooth gray-white body, without any leaves in winter, is quite noticeable. It is then an object of attraction to all domestic and wild animals, for it produces an immense supply of buds and flowers, which are very sweet, all of which are eagerly devoured. The tops are often cut off so that animals may feed upon them, since in winter other vegetation is of the driest kind, and these fresh buds and flowers are a welcome relish. The ground underneath is well tramped by the animals looking after the individual interests of their stomachs. It is next to impossible to make botanical specimens so as to show the number of buds and flowers on the branches, for they readily drop off. When a group of trees are in bloom it forms a beautiful sight. No green leaves obscure their glory. At the time of the full bloom no other plant competes with it in number of beautiful flowers. This is the more interesting because if the tree was like most other trees, useful for timber and fuel, it would be scarce. As a compensation nature has made it a food for animals at the time of scarcity and given it an abundance of beautiful flowers.

IPOMŒA INTRAPILOSA.—Very little is known regarding this species.* It has probably a much less limited range than *I. arborescens*. It was first collected by Dr. Palmer in 1886 and by Mr. Pringle in 1889. It is described as "an irregular-growing tree, twenty to thirty feet high." The corolla is larger than in *I. arborescens*, and with the branches and leaves completely glabrous. This tree was first considered as a variety of *murucoides* by Dr. Gray, but a study of more material seems to justify me in raising it to specific rank.

This species, like the others, would, doubtless, be a very attractive plant in cultivation.

IPOMŒA WOLCOTTIANA.—This species† (see p. 365) has only been reported from Manzanillo, in the state of Colima. Here Dr. Palmer obtained specimens in 1891. It is undoubtedly the most graceful species of the group. The tree has a very large top, and the branches are long and nearly pendent, covered with an abundance of flowers and buds. As stated above, Dr. Palmer obtained seed of this species, and although every effort was made to germinate them, it was without avail. Not only was I unsuccessful in growing the seeds, but a part were sent to Mrs. H. L. T. Wolcott, at Halifax, Massachusetts, who gave them the most careful attention, but without success. Not only in her efforts in attempting to raise this tree, but for her success in growing a number of interesting Mexican plants, I have named the above species in her honor.

* *Ipomœa intrapilosa*, Rose.

Ipomœa murucoides, var. *glabrata*, Gray, *Proc. Amer. Acad.*, xxii., 440 (1887). "A large irregular-growing tree, twenty to thirty feet high," nearly glabrous throughout; leaves triangular, shortly acuminate or sometimes nearly oval and obtuse, truncate or a little rounded at base, 5 to 10 cm. (2 to 4 inches) long, petioles 5 to 7.5 cm. (2 to 3 inches) long; calyx deeply five-parted, glabrous without, hairy within; sepals oval, acutish, 12 to 16 mm. (5 to 8 lines) long; corolla white, "with yellow shading at the base of the tube," glabrous without, about 7.5 cm. (3 inches) long; carpels and seeds not seen. Rocky hillsides; only known from the state of Jalisco.

Dr. Gray, after describing the variety, made the following remark, "Palmer's specimens are glabrous or very early glabrate, even to the calyx; indeed, even the corolla is almost glabrous in the bud. The calyx is short, the leaves acuminate, and the petioles elongated (two or nearly three inches long)." Except as to the acuminateness of the leaves, these characteristics are opposed to *I. murucoides*. The very inappropriate name, *glabrata*, has not been used, as it has previously been employed by Meissner in *Flora Brasiliensis*, iii., 226.

Specimens from the following places have been examined: Jalisco, Chapala (Palmer, October-November, 1886, No. 703); near Guadalupe (Pringle, December 14th, 1889, No. 2443).

† *Ipomœa Wolcottiana*, Rose, sp. nov. A tree nine meters (thirty feet) high, with a trunk sometimes three dm. (one foot) in diameter; branches slender, somewhat drooping; leaves ovate to ovate-lanceolate, 7.5 to 12.5 cm. (3 to 5 inches) long, 3.7 to 8.7 cm. (1½ to 3½ inches) broad, rounded or truncate at base, acuminate, glabrous on petioles, 5 to 10 cm. (2 to 4 inches) long; flowers in numerous short racemes or corymbs, mostly naked; pedicels jointed near the base, little if at all thickened upward, 8 to 12 mm. (4 to 6 lines) long; calyx 10 to 12 mm. (5 to 6 lines) long, glabrous; sepals nearly equal, oblong or oval rounded at apex; corolla white, broadly campanulate, 6.25 cm. broad, with a short thick tube 3 cm. long; capsule oblong, 18 mm. (9 lines) long, glabrous, two-valved, four-seeded, separating into four carpels; seeds oblong, 8 mm. (4 lines) long, with margins covered with a long reflex coma longer than the seed. Rocky hills. Manzanillo, Colima (Dr. Edward Palmer, March 2d to 18th, 1891, No. 1342).

The following dichotomous key seems to contain the most usable characters:

- A. Seeds covered with short black hairs.
Ipomœa fistulosa.
- AA. Seeds with long white hairs only on the angles.
- B. Calyx large, clothed externally with white wool; corolla woolly without.
Ipomœa murucoides.
- BB. Calyx small, not woolly externally; corolla glabrous without.
- C. Leaves slightly cordate at base, young parts of stems and leaves (especially beneath) pubescent; sepals pubescent without, at least when young, and tardily glabrate.
Ipomœa arborescens.
- CC. Leaves rounded at base, glabrous; young parts of stems minutely pubescent and early glabrate; sepals glabrous without.
- D. Sepals hairy within, larger than the next, acutish; pedicels elongated, sometimes one and a half inches long, thickened above; branches erect; corolla, with broad funnel-formed throat, two inches long; stamens at length exserted; filament broad, with a tuft of long hairs near the base.
Ipomœa intrapilosa.
- DD. Sepals glabrous both within and without, small, obtuse; pedicels short, slender; corolla salver-formed, with broad throat; proper tube very short; stamens included; filament narrow, with a small tuft of short glandular hairs.
Ipomœa Wolcottiana.

I wish to express my gratitude for aid received in the preparation of this paper from the following gentlemen: Professor A. Dugés, Dr. A. Engler, Mr. W. Botting Hemsley, Dr. B. L. Robinson, Capt. John Donnell Smith.

Dept. of Agriculture, Washington, D. C.

J. N. Rose.

Plant Notes.

GERARDIA PURPUREA.—It seems a pity that plants with such beautiful flowers as some of our *Gerardias* should have the habit of attaching their rootlets to the bark of the roots of neighboring plants and living on their sap. True, they are not entirely parasitic, but they can hardly get along without robbing some other plant, and this depraved tendency is enough to banish them from gardens. Nevertheless, there are places in wild gardens where they are most effective. In the low grounds of some of our southern states the Purple *Gerardia* often covers entire acres, and becomes a very distinct feature in the landscape. It is naturally a low, spreading plant, not much more than a foot high, with very slender stems and linear leaves, with flowers about the size of a *Maurandya*-blossom, and quite as handsome. When growing in tall grass the support thus received lifts it up considerably higher, and it is among the grasses and strong-growing plants along water borders, where natural effect is desired, that these plants are very useful. When Mr. Nash reclaimed his swamp in Clifton, New Jersey (see vol. v., page 494), he took pieces of sod from different places in the neighborhood and set them along the borders of his Lily-ponds. Among these were plants of this *Gerardia*, and they have a lightness and grace which adds much to the fringe of wild beauty along the bank. Wherever any natural planting is wanted along the banks of a stream or pond this Purple *Gerardia* should not be neglected.

CYTISUS NIGRICANS.—We have none too many dwarf flowering shrubs, especially such as flower in midsummer and later, and it is, therefore, somewhat surprising that this old plant, which was introduced into English gardens more than a hundred and fifty years ago, and which is perfectly hardy in this country, is not more generally used. If it is cut back for a few years when it is young, until it becomes somewhat stocky, it will make a rather broad bush not more than two feet high, but of much neater habit than if left to itself, when it is apt to be twiggy. Its pea-shaped flowers are a bright yellow, and are borne in long upright racemes. It is a desirable plant all the season

through, since its delicate compound leaves turn to a dark plum color in autumn. *Cytisus capitatus*, another member of the same family, is also a good plant, though not so graceful as *C. nigricans*. *C. purpureus* has low procumbent branches, which make a fine show of purple blossoms in May, and remain a long time in flower. This plant is often grafted on some tall-growing species, but its natural trailing habit adapts it to slopes and rock-work, where it is much more interesting than when grown a standard.

PANICUM VIRGATUM.—This is one of the handsomest of our native August-flowering Grasses. It is reliably hardy here, and soon forms clumps some three feet or more tall at flowering-time. It has long, flat, narrow leaves and very open panicles of flowers—so large that at last the culm often bends under their weight. The whole appearance of the plant is light and graceful. As will be noticed, it is about the same height as *Eulalia gracillima univittata*, and during the present dry season has been more attractive than this species, which suffers if not provided with an ample supply of moisture.

Cultural Department.

Filmy Ferns.

THESE beautiful Ferns require but a trial to convince one of their easy cultivation, and there are few classes of plants from which the grower can derive more pleasure. In a healthy condition, the cool, deep moss-green fronds, with gems of dew hanging from every point, are always a pleasant and interesting sight. They do best in a cool shady house at the back of a high wall or in a similar place where sunshine seldom penetrates. But if such a place cannot be provided they will flourish in a shady spot in a cool greenhouse in a pit sunk about two feet below the level of the ground. This should be covered with a frame, shading the glass heavily in summer and lightly in winter, the plants being placed on a staging supported about six inches from the bottom of the pit. The atmosphere must be kept well charged with moisture by sprinkling about inside the frame, where it can be conveniently done without throwing the water over the foliage; for, although Filmy Ferns like moisture and require to be well watered at the root, they should not be damped or syringed from overhead if it is possible to keep them moist without it. If, however, the moisture is not condensing on the fronds as it ought to do, it is better to syringe them than to allow them to become dry, when they would shrivel. They require little or no air, and if given air at all it should be at night or on dull days. The temperature must at all times be kept as cool as possible, and just enough artificial heat used to keep them from freezing in winter.

Some of the dwarf varieties of these Ferns are especially adapted for cultivation in Fern cases or under bell-glasses in rooms, if placed where the sun does not strike them, and plentifully supplied with moisture. A close atmosphere does not interfere with their growth in the least, and we have seen some beautiful specimens grown in this way of such varieties as *Trichomanes radicans*, *T. reniforme*, *T. venosum*, *Hymenophyllum demissum*, *H. flexuosum* and other dwarf sorts. A compost of a very open character is required for Filmy Ferns, a suitable one being equal parts of turfy loam, leaf-mold and fibrous peat, broken sandstone and a few pieces of charcoal. The finer particles should be sifted out so as to leave the material as porous as possible and thus insure the free passage of water and admit air to the roots of the plants.

The Todeas, being strong growers, require to be planted in pots, but for the dwarf species, with creeping rhizomes, shallow pans will be found more suitable. In all cases good drainage should be provided for several varieties of Todeas, and all the species and varieties of *Hymenophyllum* and *Trichomanes* are included under the head of Filmy Ferns, and are generally found in caves and rocky crevices. Todeas are much the stronger growers, and the variety *superba* has fronds eighteen to twenty inches in length. There are several distinct varieties, but it is impossible to do them justice by word-description or to convey even a faint idea of their beauty to any one not acquainted with them. Of the *Trichomanes* and *Hymenophyllum* there are many varieties, ranging from an inch to above a foot in height, and gathered from many different parts of the world. One sort, the beautiful little *Trichomanes Petersii*, is a native of Carolina, but is very rare.

T. radicans Americana is also a North American variety, while several of the *Hymenophyllums* are found in tropical America.

Tarrytown, N. Y.

William Scott.

Fall-sowing of Annuals.

IN almost all gardens there will now appear vacant spaces of ground from the time of ripening or the passing over of plants. No time should be lost in the proper tillage of such soil and in preparation for another year. Unless the planting of such places is already otherwise arranged for, they should be sown at once with the seed of hardy annuals for spring-flowering. Some plants are never so vigorous and thrifty as when germinated from seed sown in the fall and allowed to winter out, besides which they flower much earlier in the ensuing year than those grown from seed planted early in the spring. These winter annuals, as I have heard them called, vary in numbers according to the latitude, some of them being more satisfactory south of New York. Here we find the most satisfactory list of such annuals to be *Calendula officinalis*, *Calliopsis Drummondii*, *Centaureas*, *Eschscholtzias* and Poppies. There are many others, but these are useful and satisfactory flowers, and quite enough at least for a trial. The sooner seeds of these are sown the better. The *Calendulas* and *Eschscholtzias* may be slightly covered, and the others mixed with a liberal supply of fine earth and sown broadcast. Under ordinary conditions the seed will soon germinate and make nice little plants before winter. It is scarcely worth while to thin them out as the winter thawings will usually dispose of surplus plants. Without protection there will usually be a nice lot of plants ready to grow away vigorously in the spring and reach a size which will surprise any one not accustomed to this method of cultivation. A fall-sown *Calliopsis* will fill a space three feet in diameter, while in May and June Poppies are a delight in their vigor and profusion.

It is worth while to make a fall sowing of *Mignonette* seed which will, however, not germinate before early spring. The plants are apt to be better than those grown from seed sown at the usual planting time, and, besides, in spring one is often hurried and early sowings are deferred too long.

Elizabeth, N. J.

J. N. G.

Winter Pears.

I SHOULD like to call attention to one of the new Pears, *Directeur Alphonse*, a good grower, but not a well-shaped tree. The tree begins to bear very early, and should be checked by removing nearly all the fruit for a few years. The pear is large to very large and shapely; it ripens in midwinter and is sweet and finely flavored. From what I know of it large trees of this variety promise to be very prolific.

Josephine is another admirable winter pear. The tree begins to bear very early, and in this case also close thinning must be practiced. The vigor of growth is inclined to go all to fruit, and the result is stunted trees. The pears come in bunches. They are shaped like Anjou and keep till April. I had them last winter in fine keeping about as long as I had winter apples. They were stored in bins in a cool cellar with apples. The flavor is hard to distinguish from Anjou. This pear deserves the best attention and widest dissemination.

I have not yet brought to fruit any of Fox's seedlings, but from what I have seen of Colonel Wilder I am confident that it is to be one of our very finest winter pears. P. Barry, a poor grower, is gaining a splendid reputation. It was on exhibition at the Chicago Exposition late in May of 1893.

I have not lost any partiality for *Beurre D'Arenberg*, another very late winter pear. The tree is a fine grower, very hardy, and generally gives a fair crop. It needs good culture. The pear ranks among the tart kinds, which are very agreeable to many people.

President Mas ripens along with Lawrence. It is a larger pear and with a vinous tone to the juice. Most people might prefer the sweeter Lawrence. They make a good pair. The tree is thrifty, but not vigorous. The fruit is large and pyriform.

By this list, if we begin with Anjou for Christmas, and Lawrence for a little later, we have as complete a list of winter pears as of winter apples, which is what we have needed. There is no reason why our bins shall not be supplied as freely with one fruit as the other. Pear-trees take less room, bear more to the acre, and give a surer crop than Apples. The trouble heretofore has been that we have had few except short keepers that must be sold or used nearly as soon as picked.

As a market fruit we can easily find a place for every winter

pear we can raise. I suggest to apple-growers to turn a part of their attention to pears. They will ship better than apples, and pay a better price. Lawrence has proved very profitable. I have no fruit of any sort that pays better than Anjou. The tree is a model of symmetry and power yearly to bear splendid crops of very large smooth fruit.

Clinton, N. Y.

E. P. Powell.

The Southern Tomato-blight.

THIS disease was quite prevalent during the season of 1892 among the Tomatoes growing in my garden and also on the experimental grounds at the station. Its first indication is the wilted appearance of the plants, as though from lack of water or from some injury. In many instances the entire plant suddenly wilts; but usually at first it is only the tip ends of the branches that are affected. The wilted portions soon die and dry up and the plant makes a sickly growth. Frequently the disease extends throughout the entire plant, which dies, turns black and dries up.

Last season only a few plants were affected among those growing on our experimental grounds.

We observe that the disease seems to be more prevalent upon land where Tomatoes were grown the preceding year than where new ground is planted. In my own garden last season five rows of Tomatoes were grown, one row of which was planted where Tomatoes were grown the preceding season. That entire row of plants was destroyed by this blight, while there were no indications of the disease among the plants in the remaining rows.

Thus far this year the plants on our grounds are entirely free from the malady, although no precaution has been taken except to plant on new ground. Spraying the plants thoroughly with Bordeaux mixture has been recommended to prevent this disease, but we have not yet tested it for that purpose.

Ag'l Experiment Station, Newark, Del.

M. H. Beckwith.

Grapes, Good and Bad.—In my list of more than sixty Grapes over half are nearly or quite worthless. Among them are Vergennes, which lacks quality and is tough; Diamond, from its utter instability in ripening; Eaton, from its coarseness and pulpiness; Woodruff Red, from its positively bad quality and lateness of ripening, except in very favorable localities; Jessica, because it is all seeds; Empire State, because as soon as ripe it withers and drops from the stem. There is no excuse for sending out hereafter a grape inferior in bunch, color, beauty or quality to Brighton. Here is a grape that may stand fairly as a standard. It lacks, however, ability to self-pollinize, and it loses flavor soon after ripening. Now give us improved Brightons, improved Wordens, improved Herberts, improved Niagaras, improved or enlarged Delawares, an earlier Jefferson, and a hardy Iona.

Clinton, N. Y.

E. P. P.

Helianthus mollis.—Under the name of Grandiflorus I lately saw at Mr. W. A. Manda's nursery a variety of this native species, which is noble and distinct in foliage and habit, and bears fine, firm, single flowers about four inches in diameter. The plant flowers at the height of four feet, has hoary leaves and is not at all weedy in habit.

Elizabeth, N. J.

J. N. G.

Correspondence.

Monœcious or Polygamous Willows.

To the Editor of GARDEN AND FOREST:

Sir,—With reference to the letter by Mr. J. G. Jack, of the Arnold Arboretum, published in your issue of the 25th April last, I am sending you a specimen of *Salix elegans*, Wall., collected in the north-western Himalayas, in the Jaunsar District, which has both male and female flowers on the same spike. The male flowers are collected on the lower half of the spike, and the female flowers on its upper portion. This species of *Salix* is common in the north-west Himalayas at elevations of from 7,000 to 10,000 feet, especially on the outer ranges. Specimens with polygamous flowers have been collected at Deota, Deoban and Bodyar, all in the Jaunsar District, so that it may be safely said that the polygamous form is also common. There are several other species of Willow in the Jaunsar district, but no polygamous flowering spikes have as yet been found on any of them.

This species is very commonly attacked, and often almost entirely defoliated by the larvæ of a beetle very closely allied to *Melasoma Populi*. The imagoes of this beetle appear in large numbers about the middle of the month of June. The

larvæ themselves are attacked by a species of *Tachina*, and also by a small green hymenopterous insect, probably one of the chrysididæ.

Imperial Forest Service, Dehra Dun, India.

C. Gilbert Rogers.

[The specimen sent by our correspondent reminds us of our own *Salix rostrata* in the general appearance of its leaves; and, like our species, it is said to attain the size of a large shrub or small tree in its native habitat. It is one of twenty-five or thirty species of Willow said to be native to British India. The specimens submitted very plainly show their monœcious character. They are long past the flowering stage, and the fruiting capsules seem nearly mature, but the male flowers are still persisting and entirely cover the basal half of each spike, while the female flowers occupy the upper end. It is of interest to have these specimens from another part of the globe, and we have no doubt that other careful observers will be rewarded by finding many cases with monœcious or polygamous flowers.—Ed.]

Hardy Plant Arrangements.

To the Editor of GARDEN AND FOREST:

Sir,—The letter and the editorial article on Herbaceous Borders in your issue for August 22d, embolden me to speak of a floral combination which is now in splendid bloom in my own garden, and which it is a pleasure to possess. It consists of a clump of tall *Hibiscus Moscheutos*, with stems five feet high and flowers a deep clear rose color, and surrounded by white Japanese Lilies. Altogether, the group seems very effective, and perhaps some of your readers would like to try the arrangement on a larger scale. In early spring this bed was covered with the hardy *Primula vulgaris*, and the dark velvety flowers were beautiful to see. The leaves of the plants are now lying flat on the ground, overshadowed by the larger plants above them.

Hartford, Conn.

G. N.

Recent Publications.

Annals of Horticulture in North America for the year 1893. By L. H. Bailey. Orange Judd Co. 1894.

This volume differs somewhat in plan from the earlier ones in the series, because so large a portion of it is devoted to the history of horticulture at the Columbian Exposition. The subject, however, is of sufficient importance to warrant all the attention given to it, but it seems unfortunate that the "special annals" have, therefore, been materially curtailed. It is a misfortune that the demand for such an excellent work as this is not such as to justify the enlargement of this volume so that the usual directories, indexes to literature, obituaries, etc., could have been published as usual. Professor Bailey passed a large part of the summer at the Chicago Fair, and how carefully he studied the horticultural features of the exhibition is known to the readers of GARDEN AND FOREST, for which he prepared an admirable series of descriptive letters. We are glad that many of the facts in this continued correspondence have been collected together, as they constitute the most thorough and impartial record of the exhibition that has been or is likely to be published.

The first chapter, which is on the general subject of Crops and Prices, is much more than a mere schedule of the amount of horticultural produce sold and the money which it commanded. Careful descriptions of new methods of cultivation, of marketing and of exporting are given, while sketches of various features of the fruit industry, fresh notes on such topics as American grapes abroad, the import and export of fruits and of vegetables make instructive reading. The next section treats of such interesting subjects as floriculture in landscape-gardening, the new enterprises and organizations of the year, horticultural education, enemies and diseases of plants, the legal aspects of horticulture as seen in state laws and custom-house decisions. The Columbian Fair then occupies seventy pages, while the so-called special annals and an admirable index complete the volume.

Professor Bailey remarks in his preface that the failure of the rural arts and sciences to take rank abreast of the arts

and sciences in other fields of human progress is largely due to the fact that they lack a permanent and attractive literature. He modestly adds that this series is not expected to supply a want of this sort, and yet it certainly will do much to furnish the data for such a literature. If this series had been begun twenty-five years ago, and carefully carried out in the direction and within the limits now laid down by Professor Bailey, we should have to-day a collection of material which would be invaluable for reference to students of horticulture.

Notes.

Perhaps our readers should be advised that it is Dr. Edward Palmer himself whose portrait appears in the illustration of the grove of Tree Morning-glories on page 364 of this issue.

The beauty of the hips of *Rosa rugosa* is well known, and not long ago one of our correspondents spoke of their edible qualities. In reference to this last suggestion, a correspondent writes that these fruits are highly valued in France and Germany for their flavor in preserves, soups, marmalades and ices.

There is a certain stiffness about the shrubby *Althæas* which does not commend them to some persons, but every one must admire the cheerful way in which they endure a drought. Just now, when the foliage is dropping from many sturdy shrubs in parks and gardens, the leaves of the *Althæas* look fresh and the flowers seem brighter than usual.

It is well known that various Grasses constitute the greater portion of the flora of our western plains and prairies. According to a bulletin of the South Dakota Experiment Station, about 160 species of these are native to that state, and although a few of them are weeds, most of them are more or less useful as forage plants. But, although so many different species of useful Grasses are known, seventy per cent. of the hay from native growth is obtained from less than a dozen species. The same is true of the native pasturage, ninety-five per cent. of which comes from less than twenty different species. In any one locality the number of kinds rarely exceeds half a dozen.

Attention is called by the *Springfield Republican* to one fact in relation to the abandoned farms of Massachusetts which has not been generally considered, which is that many of these farms are being stripped of their timber in a merciless and unnecessary way. Certain people make a business of buying the farms where trees are standing and setting up a steam sawmill at once to turn them into lumber and money. This is a profitable operation for the buyer, who abandons the farm again as soon as he has skinned it. Of course, all this is against public policy, and if any intelligent attention was given to the general welfare there would be authority somewhere to arrest this wanton slaughter of the woods.

The *Gardeners' Magazine* states that an Alpine garden has just been opened by the Botanical Society of Montreux on the summit of Rochers de Naye. The soil of the area devoted to the garden is of good depth and quality, and it is sheltered from the north and east by rocks. Planting was begun late in May last, as soon as the snow had melted, and was completed in June. The new garden is named after Professor Favrat, of Lausanne, who has devoted much attention to the project. It differs from other gardens in which experiments are made with Alpine vegetation in the fact it is on the summit of a mountain, and it will thus assist in solving many problems that could not be studied elsewhere.

On the 7th of August an unusually heavy hail and thunder storm swept over the city of Berlin and its vicinity, and inflicted great damage on all vegetation, practically destroying the fruit-crop. Not only were many fruit-trees uprooted and large branches twisted off of those which remained, but the remnant of fruit which was left on the trees is scarred and gashed so as to be unmarketable. The commercial florists and gardeners have suffered so seriously from the loss of glass and plants that their business for the time seems practically ruined. The disaster to these people has been so serious that the General Secretary of the Association for the Advancement of Horticulture has issued an appeal to professional and amateur gardeners to send contributions of plants, cuttings and any other assistance to the sufferers.

Meehans' Monthly publishes a note from G. M. West, of Michigan, who states that *Trillium grandiflorum* grows in

the hardwood section of the upper peninsula of Michigan in such abundance, and with such luxuriance of habit, size of flowers, purity of color and firmness of texture as can be found nowhere else in the United States. Flowers measuring six inches across are not uncommon. The petals do not turn to dull pink when they ripen, as they usually do elsewhere, but persist in a pure white color. They are usually in full flower on Decoration Day, and are freely used on that occasion. The flower-stalks should be cut when the buds are fully grown, but just before they open, and with long stems; and if taken into a house where they can be kept at a temperature of sixty-five degrees they will not only expand fully, but grow much larger than they do in the woods.

The killing drought of the past summer has turned the thoughts of horticulturists to the advantages of irrigation, and among other methods the delivery of water below the surface—sub-irrigation, as it is called—is the subject of renewed discussion. Professor Taft, of the Michigan Agricultural College, writes to *The Florists' Exchange* that his experiments seem to show that there will be few seasons when one and a half inches of water, applied once a week, will not be enough for any crop in any soil. This amounts to something like 1,200 barrels an acre, but in many soils when sub-irrigation is practiced no more than one-half or one-third of this amount will be needed. Ordinarily a good deal less than a gallon to the square foot will be required if applied once a week in the driest season. When tiles are properly laid, that is, laid as nearly level as possible, water can be given in this way more easily and evenly than in surface furrows.

The oversupply of California fruit in eastern markets since the ending of the railroad strike early in August, has made prices so low as to be unprofitable to the growers, and last week but fifty-eight car-loads were sold in this city. The pears and peaches are much larger than those which came a few weeks ago. Plums are becoming less abundant. The market for dried prunes is promising since the partial failure of the prune crop in France. While the California crop is not large, this fruit will be profitable, since the associations have set the minimum price at six cents a pound. In a dispatch to the New York *Tribune* it is stated that no less than 409,720 pounds of dried apricots were shipped from San José last week. Tokay grapes are the most popular variety of this fruit, but these are yet comparatively small and lacking in high color. The first grape-fruit from Jamaica, of medium size and not fully ripened, is being offered at five dollars a box. The first Japanese persimmons from Florida have reached here later in the season than last year, and so far are of inferior quality. Cape Cod cranberries have been here for more than a week, and the best-colored bring \$8.00 a barrel at wholesale. Huckleberries—probably brought out of cold storage—are still occasionally seen in the markets. Until last week fresh asparagus from New Jersey could be had at twenty-five cents a bunch. Crisp, well-blanchéd celery is abundant and cheap, and this comes from Long Island, New Jersey and the western states.

A bulletin on the effect of spraying nursery-stock with fungicides, designated as No. 7 of the Division of Vegetable Pathology, has just been issued by the United States Department of Agriculture. During three years, in the nurseries of Franklin Davis & Co., Mulliken, Maryland, more than a million Pear, Plum, Cherry and Apple trees have been treated under the direction of Dr. B. T. Galloway, and the practice has so commended itself to the proprietors that they do not hesitate to pronounce it equal in importance to cultivation or fertilization of the soil. Different leaf-blights attack both the seedlings and the budded or grafted stock of all these trees. Without going into details, it may generally be stated that the Bordeaux mixture increased the growth of the stock, especially of Pears and Cherries; that the application is thoroughly practicable; that it need not cost more than twenty-five cents a thousand trees the first year, and the same amount the second year, while the cost will be increased to thirty-five or forty cents the third year, making the entire cost of treating nursery-stock until the buds are two years old from eighty-five cents to a dollar a thousand. The result is better trees every way and a handsome profit. The experiments seem to have been conducted throughout in a thoroughly scientific way, the diagrams and figures are very helpful in illustrating the text, and the bulletin is commended to every grower of fruit-trees. It has often been suggested that the spray of the Bordeaux mixture seems to have a direct stimulating influence upon the growth of some plants apart from its value as a preventive of fungous diseases, and these experiments seem to bear out the theory, especially in the case of Pear-trees.

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The Element of Beauty in City Parks.

THE somewhat pretentious new bridge which has been built over the Harlem River at the point where the old McComb's Dam Bridge once spanned it, is soon to be opened for traffic, and at a meeting of the Park Board last week it was agreed to buy a few acres of land at its northern extremity so as to provide for the structure something in the way of a park-like approach. If this land were properly treated it would make an appropriate addition to a public work of such magnitude, but, so far as the reports of the meeting show, no step was taken to insure such treatment—that is, the public is not informed that the matter was referred to the landscape-architect for any suggestion or advice. It is to be hoped, however, that the Board will in this case follow the natural order of business and refer the matter to their official adviser, who, after making a careful study of the land and deciding on a general scheme of treatment, can mark out its proper boundaries and give intelligent reasons for his choice. It would hardly seem possible for a Park Board to pursue any other course, but, judging from the prevailing practice of our present officials, they will seize such territory as they imagine they can take care of, and after outlining, in a haphazard way, its limits, they will begin to blast and dig without any clear or intelligent conception of what they propose to do or how the work will ultimately appear. Under such handling all the money expended on the new park is likely to be wasted, and instead of beautifying the neighborhood and dignifying the approach to the bridge, it will be an eyesore and an offense to good taste for all time to come.

It will be remembered that in the case of the Harlem Driveway, which begins near this bridge, the commissioners assumed to take the matter into their own hands, though there is not one of them who is suspected of possessing any original aptitude or experience in this direction, and not one whose judgment on any of the questions involved would have the slightest value. They simply took a strip so many feet wide, and after ordering an engineer to lay down a road gave out the contract. Every newspaper in the city and every association connected with art at once re-

monstrated against such barbaric treatment of two or three miles of the city's water-front. It was calmly replied to these remonstrances that a landscape-architect would be employed when the proper time came. Of course, the time for study is at the outset and in the preparation of a design, and the representatives of any civilized city would naturally have referred the whole subject to a skilled park-maker, especially if there were such a one in their employ, and this official would then have made a careful survey of the ground, with a study of its special features and surroundings. He would have worked out a plan, marked the boundaries of the land required, making it wider here and narrower there, as the situation demanded, with a definite purpose not only to make a good driveway, but to accommodate the throngs of people who would be there on festal occasions, to devise ways for crossing the road and for preventing congestion at certain points, and to furnish facilities for the enjoyment of the animated spectacle which will hereafter be presented both on the river and on the road. All this would have been carried out in the most practical way, and yet with a constant purpose to develop the pleasing picture in the artist's mind which was to be realized in the construction. The Park Board, however, began to construct a pleasure-ground which was to cost millions of dollars, without trying to form any idea how it would look when completed; with no intelligent notion, in fact, how it ought to look, and with no suspicion that an artist in landscape could here conceive and execute a panorama of riverside scenery that would distinctly enhance the attractiveness and value of this part of the city. It now appears that these practical people who sneer at art, and who have given no attention to preserving or developing the natural beauties of the region, have also undertaken to carry out an impossibility in construction—that is, such a road as they have projected cannot possibly be built on the land taken for the city, and unless they can piece out their possession in some way they must whittle down the sidewalks or the wheel-track.

What may happen to the new park north of the Harlem is foreshadowed by what is going on at the southern end of the bridge, where the city already possesses some land for an approach in the shape of a triangle of which the river forms one side. Upon this little park area there is a massive pile of rock which certainly might be utilized in some way to beautify it. Just what advantage should be taken of this natural feature, and just how much of it should be allowed to remain in position, it would require some study to decide. But so far, as it appears, the landscape-architect has not been consulted in the matter, and this means that the commissioners have again assumed to design a park themselves. At least, they have ordered the rock blasted down to the level and carted away, and no one knows what they will next attempt. Every one does know, however, that a work which is meant to be an ornament to a city like New York, and which ought primarily to be a work of art, should not be undertaken without some careful design by a competent artist.

This is a matter of more than local importance. Scores of cities are securing land in these days for public purposes, and if the metropolis of the New World is willing, by its example, to assert that there is no such a thing as landscape-art, or, at least, that it is not worth considering, there is danger that the element of beauty in the design and construction of parks will be ignored elsewhere. If this notion should prevail, our city parks may have some value as breathing-places, but they will altogether miss their higher purpose, furnish no rest to the weary mind and make no appeal to our higher natures through the imagination. The work of the landscape-painter has a value because he paints scenery that he has found to be attractive, and the purchaser of his pictures desires to see with his own eyes the beautiful aspects of nature which the painter spends his life in searching for and reproducing. As civilization advances, men of liberal culture have discovered that they can enjoy the real thing as well as they do the

skillfully painted picture of it. A desire for the actual possession of beautiful scenery has therefore become one of the positive needs of modern society, and when the representatives of a great city have purchased land for public use it is an essential part of their duty to see that it is made beautiful. The landscape-architect is trained to furnish these pictures; to conceive them clearly in the first place, and then to plan for an arrangement of ground lines and surfaces, with vegetation so disposed as to produce with definiteness the results he has foreseen from the beginning.

For the credit of the city, for the benefit of its example, for the sake of art in America, it is to be hoped that the planning of this northern park approach to the new Harlem bridge will be referred at once to the landscape-architect, and that the drilling and blasting at the southern end will be suspended until he can report upon it. It would be a disaster if the same waste of money and destruction of natural beauty which are going on in the Speedway are repeated at both ends of the new Harlem bridge.

THE constitutional amendment relating to state forest-lands, which we discussed last week, was passed by the convention on Friday with little opposition. The text is as follows:

The lands of the state, now owned or hereafter acquired, constituting the forest-preserve, as now fixed by law, shall be forever kept as wild forest-lands. They shall not be leased, sold or exchanged, or be taken by any corporation, public or private, nor shall the timber thereon be sold, removed or destroyed.

No doubt, the adoption of this amendment was made easier by the revelation of corruption in the administration of the forest-lands which had been made during the week by the Comptroller of the State. These revelations show that there has been fraud and bribery in the transfer of lands and much cutting of timber in the state forests, which was not only illegal, but the result of conspiracy between trespassers and public officers. The adoption of this amendment certainly demonstrates an increased interest in the subject of forestry, and it may relieve the forests from some danger. Nevertheless, we consider it a misfortune that such a provision should be imbedded as a principle in the fundamental law of the state. It assumes (1) that there is no such thing as rational and conservative forestry, or (2) that a civilized American community cannot be trusted to organize and develop any such a system of forest practice, either because our people lack the intelligence to do this in a scientific way, or because they lack the moral fibre to administer such a trust without official knavery and peculation.

Vases for Cut Flowers.

THE subject of the proper form and color of vases for cut flowers is not unworthy of consideration from an artistic point of view, especially when we see the utter neglect of the very first principles of art with which such matters are usually treated. In this, as in so many other things, we have much to learn from the Japanese, who have devoted a great deal of study to the subject, and whose refined taste long since reduced the arrangement of flowers to something like a science. We cannot expect to equal Japanese methods of treatment, because our own ideas of cut flowers as ornaments are ingrained and we can hardly hope to change them. But we can, at least, lay down some sound principles, the application of which may do something toward discarding the hideous vessels into which flowers are often put, or rather crowded. As in all applications of abstract art, fitness is the first thing to be considered. A flower-vase must be perfectly adapted to its purpose, and that purpose is, of course, to display flowers to the best advantage. Since the flowers only are objects of display and study, the material of the vase must not be such as to attract attention. Hence, cut-glass vessels and all showy patterns, whether of glass, earthenware

or metal, should be avoided. For the same reason the forms of the vases should be simple and not in themselves catch the eye of the observer, excepting only as their special fitness may deserve notice. A showy vase, however exquisite in form, is wholly unfit for a flower-vase, and the more highly it is ornamented the more unfit it is.

Of course, different forms of vases will be required for different kinds of flowers. A flat, circular dish is needed for Water-lilies, and as the flowers are in this case large, the containing vessel must be ample in size, not merely to hold the flowers, but also to preserve a proper sense of proportion. Tall spikes require tall vases, which should not be cylindrical, but should be sensibly wider at the top than at the bottom. Roses and flowers with comparatively short stems require low broad vessels, flaring at the top, so as to admit of the graceful drooping which is so attractive with both leaves and flowers. Not more than four or five differently shaped flower-vases are really necessary, the types of form being either flat or low circular vessels, which may be widely fluted upon the edges to break the too great uniformity of a plain circular rim, or round vessels which spread more or less as the sides rise from the bottom and which may also be widely fluted at the top. All forms which bulge below, or which are in the smallest degree bizarre in shape, must be rejected. The old-fashioned bulb-pot, shaped like a rabbit or other animal, with growing bulbs sticking out through holes in the surface, is the type of all that is hideous. If, with the Japanese, we consider a single beautiful flower enough at a time, a narrow containing vessel may be used. The Japanese use a piece of bamboo, which, from its irregular surface, loses the stiffness of the cylindrical form. We have no bamboo to use, and imitations in glass, china or earthenware are, like all imitations, offensive to good taste. Flower-vases should always be of some opaque material, and, all things considered, good unglazed earthenware is to be preferred, only it should be impermeable to water, and not coarse in texture. It should also be without ornamentation of any kind, and of a single and uniform tint of color.

This brings us to the subject of color in general. The elementary principle is that no color should be employed for the vase which does not perfectly harmonize with the various tints of both flowers and leaves. Since we have to deal with a great variety of colors in both, some color must be chosen for the vase which will harmonize at least fairly well with all. A pure neutral gray answers best and gives a very agreeable contrast with the various shades of green in leaves and with almost all tones of flower color, while in itself not fixing the attention too strongly. Next in order of value comes pale pure buff, not inclining to orange, but its use is more limited than that of gray. Yet it contrasts very charmingly with green leaves, as, for instance, with the beautiful green of those of *Rosa rugosa* and with all blue flowers. Opaque white flower-vases are sometimes effective by contrast, but, as a rule, the contrasts are rather too strong, especially in the case of white glazed porcelain, and the vase itself attracts too much attention. All colored glasses are to be rejected, and white or colorless glasses are also objectionable, since, as a rule, flower-stems are unsightly. I admit that there are exceptions to this rule. Gray earthenware vessels for flowers are advertised by a prominent firm of bulb-dealers in New York. Those which the writer has seen are cylindrical, and very heavy. The gray tint is tolerably good, and there are upon the surface small figures in blue enamel, which, however, in consequence of the large size of the vessels, are not objectionable. The ware, however, is very coarse, and suitable only for hall decoration with large masses of flowers. Much success has been attained of late years in this country in the manufacture of artistic earthenware, and it is to be hoped that flower-vases will be considered of sufficient importance to command the attention of skilled designers.

Newport, R. I.

W. G.

The Woodpecker and Bird's-eye Poplar.

AT the late meeting of the American Association for the Advancement of Science, Professor A. D. Hopkins, Entomologist of the West Virginia Experiment Station, read a paper on certain conditions of wood which result from attacks of birds and insects. The most interesting part of the paper to readers of GARDEN AND FOREST is that in which he identifies a bird as the cause of the peculiarly waved or curled quality sometimes found in the grain of Tulip Poplars, and presumably of Sugar Maple. At least, he seems to have established that the rare and beautiful condition known as Bird's-eye Poplar is caused by a succession of elevations and depressions in the annual layers of wood due to punctures in the bark made by woodpeckers. Referring to his investigations, Professor Hopkins says:

It was found that the depressions occurring in the wood beneath the bark corresponded with the punctures made by the birds in the outer bark. The portion of the living bark affected by the puncture becomes dead and dry, causing a calloused condition at the sides and at the bottom of the wound. This calloused condition pressing upon the cambium during the process of the first annual growth of wood after the wound is made causes it to be less, or, in other words, thinner, at that point than beneath the unaffected bark. This depression is followed by subsequent annual layers until sufficient new bark forms beneath the wound to insure normal condition. Thus, seventy-five or more annual layers may be sufficiently affected in this manner to show the wavy or curled condition in the surface of the wood in which they occur. It will readily be seen how a tree subjected to the attack of woodpeckers from the time it is a few inches in diameter until it has reached maturity would show this condition throughout the wood.

The economic importance of a knowledge of this fact is also apparent. If the lumber manufacturer should desire a quantity of Bird's-eye Poplar he has only to select the trees and logs, the bark of which shows the work of the woodpeckers in the greatest profusion, being reasonably certain that they will yield a greater or less quantity of lumber showing the desired condition. Whether or not every tree so affected will show the desired condition, or whether Bird's-eye Maple is caused in the same manner, I cannot say positively, but I see no reason why it should not be so. I do know that a species which appears to me to be the downy woodpecker, *Dryobates (Picus) pubescens*, is extremely fond of the sap of the Sugar Maple (from which Bird's-eye Maple is obtained), and that this bird often perforates the bark of this tree with innumerable holes to obtain the sap.

Entomological.

The Flat-head Pear-borer.

UP to quite a recent date the Pear-tree was that one of all our fruits which was least troubled by insect attack, its few enemies being rarely abundant and easily controlled when they did increase abnormally. In this respect it differed sharply from its ally, the Apple, which has, without exception, the greatest number of insects infesting it of all our cultivated plants.

Within the last decade the Pear has been gradually losing its exemption from insect attack, and the crop in some localities is now more endangered than any other. Of our native insects the Pear-blister mite is increasing, but may be easily controlled, and it is to foreigners that we owe most of the danger. The Pear-tree Psylla was introduced many years ago, but has, up to recent times, been confined to a few northern localities—most troublesome, perhaps, in central New York and in Connecticut. Nurseries from central New York have sent out stock containing some forms of the insect, and as a result several orchards in New Jersey, and at least one in Maryland, have been seriously injured. The probability is that at many other points the insects have been introduced, without noticeable increase as yet.

More recently the Pear-midge has been imported, and this is spreading slowly, but steadily, ruining every locality over which it extends.

During the spring of 1894 there was brought to my attention an injury to Pear-trees in Essex County, New

Jersey, which is yet more serious than any of those above mentioned, since it strikes the tree itself instead of the crop, and kills it in a few years. The culprit in this instance is a native, a species of *Agrilus*, which has been rare heretofore, and had never been taken in New Jersey even by collectors. The injury is done by the larva, which burrows between the bark and sap-wood, always in living tissue, and makes immensely long, irregular galleries, under which the wood dies, and over which the bark cracks. When a number of these insects are working in the same tree the galleries cross or join, and the tree is girdled and dies. When a few larvæ only infest it each year the tree dies more gradually, the area available for the supply of sap being reduced from year to year. In vigorous varieties, like the Keiffer, the trees will repair damages for some time; but even these succumb at last, repairs being omitted



Fig. 60.—Pear-tree, showing galleries made by borers.

first in the widest parts of the borings, and as the dead patches extend, reconstruction is less and less complete.

The illustration given herewith shows a Seckel Pear-tree at the point of branching, the bark being removed from the trunk and one of the branches to show the galleries. The tree was between five and six inches in diameter, and had been healthy and a prolific bearer until these insects attacked it. The irregularly cracked appearance of the bark, which indicates the presence of the larva, is well shown in the picture. Not only the trunks, but the branches, are attacked, even those not exceeding half an inch in diameter, and sometimes the trees die from the top, some branches going each year until all are dead. Even young trees just from the nursery become infested, and I have a small tree set out one fall, infested next summer, and dead the spring following.

A quite remarkable feature is the enormous length of the burrows, one of them, measured along all its windings, exceeding eight feet.

The larva is white, flat, the segments strongly marked and of nearly equal width, except that the thoracic segment just behind the head is greatly enlarged and almost circular. When full grown it is from one to nearly one and a half inches in length, and then bores a small chamber in the solid wood, where it changes to a pupa, and soon after to a beetle. This beetle, the product of a larva one and a half inches long, fed in a gallery eight feet in length, does not exceed three-eighths of an inch, and has a diameter scarcely more than one-sixteenth of an inch. It is cylindrical, parallel or of nearly even width throughout, and of a metallic bronze-brown color, somewhat dulled by the fine dense puncturing of the surface.

The beetle lays its eggs in June or early July; the young larva becomes evident in July, and continues feeding until the sap ceases to circulate, resumes feeding as soon as the tree begins to thrive, and in May or June becomes full grown. There is, apparently, some irregularity in the development, because I found mature beetles early in June, and late in July found larvæ that were not yet full grown when the little ones of the new brood were already beginning their work of destruction.

There is some doubt of the specific identity of the insect, only one sex having been obtained; but it will probably prove to be *Agrilus acutipennis*.

Concerning remedies it is as yet impossible to speak definitely, because the feeding habits of the beetle have not been observed.

Rutgers College.

John B. Smith.

Foreign Correspondence.

London Letter.

VELLOZIA ELEGANS.—Mr. Endicott, in a note on this plant published in *GARDEN AND FOREST*, states that its native country is not known with certainty and that it has never been collected since its discovery. It is a native of Natal, where, undoubtedly, wild specimens of it were collected by Cooper, by Gerrard, and more recently by Mr. Medley Wood. Some notes on the cultivated *Vellozias* and their allies, the *Barbacenias*, will be found in *GARDEN AND FOREST* (vol. iv., page 77).

LILIUM LOWII MAGNIFICUM.—One of the most distinct and pleasing of the newer Indian species of *Lilium* is *L. Lowii*, which was introduced in 1891, when I noted it in *GARDEN AND FOREST* (page 352). It is related to *L. Nepalense*, along with which and *L. sulphureum* it is found wild in Upper Burma, differing from that species, however, in its less reflexed flower-segments, which form a wide bell and are white, with a few pale purple spots on the inside. The variety now in flower in the Clapton nurseries has a nodding flower three inches across, white, thickly spotted and blotched with dull crimson, suggesting in its marking the flower of *Maxillaria Sanderiana*. It is to be hoped that the possessors of these new and beautiful Lilies will look after their seeds and work up a stock of plants for distribution. It cannot be too widely known that nearly every *Lilium* ripens seeds freely, and flowering bulbs can be raised from them easily in from two to four years.

NEW ORCHIDS.—The following new Orchids were exhibited at the meeting of the Royal Horticultural Society held last Tuesday:

Cattleya Kilnastiana: This is a hybrid between *C. aurea* and *C. speciosissima*, both of them forms of the labiata section of the genus. The plant shown had sturdy pseudobulbs and leaves, and the raceme bore two flowers with narrow pale rose-colored sepals, the petals broad, wavy, rose-lilac, with paler veinings, and the lip large, crisped and wavy, purple-red, with a large patch of golden yellow veined with white, the margin being lilac. It is difficult to describe the colors, but they are decidedly handsome, and the hybrid may be reckoned among the best raised by its exhibitors, Messrs. F. Sander & Co.

Cypripedium J. H. Veitch: The parents of this fine hybrid are *C. Stonei platyctenium* and *C. Curtisii*. It is in the way of *C. Morganiae*, but the flowers are larger and the shades of color slightly different. The most striking features of both parents are to be seen in the hybrid, which is certain to become a favorite with admirers of big-flowered *Cypripediums*. It was raised by Messrs. J. Veitch & Sons.

Habenaria Susannæ: Messrs. F. Sander & Co. introduced this plant last year, and they now have it in flower. It is an old, though long lost, garden-plant, for it was in cultivation sixty years ago, when a picture of it was published in the *Botanical Magazine* under the name of *H. gigantea*. It has fleshy green ovate leaves and a stem two feet or more long, bearing at the top a few large fragrant white flowers, in which the segments are spreading, the dorsal sepal broad and the side lobes of the lip deeply divided and comb-like. It is a native of various parts of India and China.

Lælia Oweniæ, a supposed natural hybrid in the way of *L. Perrini*, bearing a spike of seven handsome dark rose-red flowers, the lip not unlike that of *L. Perrini*, was awarded a certificate. *L. elegans* has been suggested as the other parent.

LYCORIS AUREA is a plant which ought to become as great a favorite in the garden as the *Scarboro Lily*, *Vallota purpurea*, or the *Guernsey Lily*, *Nerine sarniensis*. It is a much more ornamental plant than is supposed; indeed, until the bulbs lately received from Hong Kong flowered at Kew I had no idea of its great beauty. The secret is, of course, in the proper cultivation of the bulbs already referred to by me in a recent letter, and I believe if bulb-growers in the southern states would grow this plant in quantity and ship the bulbs annually to the north to flower in autumn they would do themselves and horticulture generally a good turn. Bulbs received at Kew three weeks ago and potted, three in a five-inch pot, are now a beautiful picture, the stout scapes a foot or more long, each bearing a large umbel of flowers, like *Nerines*, but very much larger than the largest, and the color deep yellow, with a lustre like a new English sovereign. This is the handsomest bulb in flower with us now.

ROSE CRIMSON RAMBLER.—The behavior of this plant has been highly satisfactory this year, the comparatively wet and sunless weather having in no wise interfered with its free growth nor affected the display of flower, except possibly to increase it. In some gardens the shoots have grown ten feet in length and they have been sheaves of bright crimson flowers for the past month or more. It is a Rose for the million, and as it grows freely on its own roots, is easily propagated from cuttings and is not particular in regard to soil, it is sure to become common.

SPIREA ANTHONY WATERER is another star plant. We have a bed of it at Kew, and it attracts everybody's attention, the flowers being a rich crimson color, in large corymbs and borne thickly on the plants, which, although not exceeding a foot in height, have flowered freely and continuously since the beginning of summer. Mr. Waterer says it is as good in its way as a bedding *Geranium*, and some people would say it is better.

FUCHSIAS AS BEDDERS.—Three of the most attractive beds on the large lawns at Kew are filled entirely with *Fuchsias corallina*, *gracilis* and *globosa*, each with a bed to itself. In another part of the garden there is a series of beds filled with a mixture of garden *Fuchsias*, and although these are good to look at they are less pleasing in effect than these three beds of the tall, graceful, dark-flowered species mentioned. Simple arrangements such as this are preferable to the mixed bedding which used to prevail here, and although many visitors compare the simple method of bedding at Kew unfavorably with the more complicated arrangements at Hampton Court and other popular resorts, people of taste prefer the one plant to each bed arrangement which predominates at Kew. The *Fuchsias* are admirable for the purpose as they soon furnish the beds and they flower freely all through the summer.

BOUVARDIAS AS BEDDERS.—These have been tried at Kew for the first time this year and they are a decided success, notwithstanding the unfavorableness of the weather we have had. Probably they are largely used for outdoor

very useful they prove when well managed. But they are first-rate in the open border, the plants branching freely and flowering well and continuously. The best red we have is President Cleveland, probably the finest Bouvardia



Fig. 61.—*Indigofera decora alba*.—See page 376.

gardening in America, but if they are not, then permit me to recommend them as being in every way suitable. I have seen them in the south of France where they form big bushes in a single season and flower most profusely. Generally here they are grown in pots under glass, and

ever raised; Maiden's Blush is the best of the pinks, and the best white is Humboldtii. Another delightful sort is the small *B. splendens*, which forms a globose little bush a foot across and flowers all over like a *Lobelia*.

London.

W. Watson.

New or Little-known Plants.

Indigofera decora alba.

THIS hardy Chinese herbaceous plant was described on page 266 of the present volume of this journal. Its value as a garden-plant is so great, however, that we have had the illustration which appears on page 375 of this issue reproduced from a drawing made by Mr. Faxon of a plant in the Arnold Arboretum, where it was sent in 1885 by the Veitches, of London, who probably received it from their collector Maries. The white-flowered variety of *Indigofera decora* is perfectly hardy, and in our climate there is no neater herbaceous plant or one that is more beautiful when the long white racemes of pure white flowers stand above the shrub-like head of clear green leaves.

Plant Notes.

CLEMATIS PANICULATA.—This plant has been praised in these pages so persistently that our readers may think it needs no further commendation, but no one can see a good plant in flower without admiring it and without feeling impelled to sound its praises, and just now it is at its best. The plant is by no means new, since Thunberg discovered it more than a hundred years ago, and it was introduced into English gardens before the beginning of the present century. For some reason it was never much heard of in English gardens, nor in American gardens either, although it was probably introduced here thirty years ago, at least, by Thomas Hogg, through the Parsons Nurseries. Perhaps one reason for its slow recognition is that seeds sometimes ripen imperfectly here, and when sown in the spring they do not often start for a year. When sown in the autumn as soon as they are ripe they begin to come up the next spring, but do not make flowering plants until the second year. The real popularity of the plant began in this country with Mr. Orpet's happy thought of grafting it on our common native Virgin's Bower and Clematis stans. The stock gives the plant an immediate start, and it will grow several feet the first year. If, in transplanting, the junction of the stock and cion is set under the ground the graft will throw out its thong-like roots at once, so that the root of the stock is soon of little use. We have already figured the plant in vol. iii., and have reproduced a photograph of a plant in bloom, and little needs to be said in the way of describing it. Its ivory-white flowers appear in long panicles late in August and continue to open for a month, and they are borne in such wild profusion that the plant becomes a mass of white above, while the lower part of the vine is well furnished with large lustrous and almost leathery leaves. These flowers are followed by heads of fruit, which have long plumose tails of a reddish tint and are almost as ornamental as the flowers. The foliage remains green until late in autumn, and in November or early winter it turns to a mass of bronze or copper color, over which the feathery tufts of the seeds hover in a most graceful manner. The plant is perfectly hardy and starts very early in the spring. Altogether it is one of the very best of ornamental climbers for porches and similar situations, and where it can run wild over the shrubbery it is as much at home as our native Virgin's Bower.

LESPEDEZA SIEBOLDII.—This plant was introduced from Japan some thirty years ago under the name of *Desmodium penduliflorum*, and as it appears at this season it is one of the most graceful of hardy herbaceous plants in habit, making a truly beautiful combination of flowers and foliage. It is really herbaceous, but it has a shrub-like appearance, with stout pithy stems from three to six feet high, which die down to the crown every winter. As the roots increase in size, the stems increase in number every year, until the plant forms a large clump. These stems are covered with a minute pubescence which gives them a distinct silvery appearance near the top, and each one is terminated by an ample cluster of showy purple

pea-shaped flowers, which is made up of many racemes, from two to six inches long, springing from the axils of the leaves. The plant has also been called *Lespedeza bicolor*, which name really belongs to a hardy slender-leaved shrub from north-eastern Asia, which grows to a height of six or eight feet, with long graceful branches, trifoliate leaves on slender petioles, and racemes sometimes terminal, but usually axillary, and either drooping or half-erect. The rose-colored flowers are smaller, and not of such a deep color as those of *L. Sieboldii*, and the large compound racemes are not so dense and handsome. The flowers begin to appear early in July, and expand for a month, while those of *L. Sieboldii* do not appear until the seeds of *L. bicolor* are ripe. Both of these plants were described and figured in vol. iv., page 112, where the tangled synonymy was first unraveled. In hot dry weather *L. Sieboldii* sometimes has a habit of folding up its leaves, but this year the plants seem to have endured the drought remarkably well, and are flowering with great vigor.

BEGONIA VERNON.—For two or three years past we have spoken of this Begonia, a plant of the *semperflorens* group, with bright red flowers and firm glossy deep-green foliage, with a bronze or blood-stained tinge which endures without fading in the full sunshine. Indeed, the plants only assume their best form and color in a sunny border, and in such a position the finely tinted leaves do not scorch even on the margin. It is small wonder that this Begonia, which was originally distributed by Messrs. Vilmorin, has so quickly taken a place among bedding-plants of the first rank. In the admirable herbaceous border around the foundation of the Arsenal building in Central Park masses of these plants are very effective. They do not grow tall, and those on the edge of the mass flower close to the turf as they grow away from their neighbors. They grow so quickly from seed that they may practically be treated as annuals, and they flower freely all summer long. Altogether they make a most attractive bed, with enough color to make it striking, while the dark and abundant foliage subdues the tone, so that there is nothing glaring or obtrusive in the general effect.

Cultural Department.

Seasonable Work.

WE are passing through a period of unparalleled drought in this section and it has been a difficult matter to keep plants alive. When rain comes it will probably be abundant, but the planting season will be a short one this fall, and all preparations should be made for it, so that no delays may occur after the needed rainfall. It is useless to lift plants or trees when the soil is so dry that it will not stay on the roots, and it is likewise useless to plant in dry soil, even if it is watered after planting, for it is difficult to soak a dry, parched soil, especially after it has been disturbed. A year ago we transplanted a large number of evergreens at this season, with such satisfactory results that we shall hereafter move any of the hardy trees and shrubs, especially the Conifers, in autumn. Magnolias are best moved in spring, as are also Rhododendrons, though we are preparing the beds for these now that there may be no delay in spring when the plants arrive. For the Rhododendrons we are using soil from a piece of intervalle land that was formerly submerged; it is of a black peaty nature and was laid up some years ago when drains were cut through, and is, therefore, well sweetened by exposure to the weather. With the addition of leaf-soil and the natural loam this will make a good soil for the finer-rooting shrubs, such as Rhododendrons and Kalmias. All the Conifers like a strong soil, with plenty of manure added; the latter heightens the color and induces vigorous growth as nothing else will, provided there is sufficient moisture in the natural soil.

The planting of herbaceous plants in autumn is equally important, and the soil should be prepared for them at once. As these are to remain permanently they need liberal treatment to insure good results for a long time to come. If the location is a poor one, and the natural soil lacking in depth or moisture, it is well to prepare the place by digging double the usual depth and mixing in, as the work proceeds, plenty of manure and good soil. Perhaps readers may tire of this constant insistence upon the necessity of furnishing the roots of

plants with abundant food in such a form and under such conditions that it is readily available for their use, but this is the only way to get any comfort out of a garden. No matter how rare or costly or beautiful a plant is, its first charm is that of vigorous health, and when starved and stunted it can never be anything other than an object of commiseration. A few plants well fed and well cared for will prove far more satisfactory in the end than ten times as many carelessly handled. Our greatest trouble here is from the encroaching roots of large Elms which grow near the borders. Sometimes we have to lift all the plants in the large borders and cut off the Elm feeders which spread throughout the bed. This has to be done at least every two years to be of any service, and the border-plants have only time to get established before it is necessary to lift them again. A rule to be rigidly remembered is, never to plant a border of flowering plants near Elm-trees, or, indeed, any other large trees, for there is sure to be injury to the plants sooner or later.

Bulbs may be planted now, and Lilies especially should be put into the ground at once, so that the set of roots made in fall may become well established. Lilies are never inactive, but soon after flowering is the most suitable time for transplanting, since directly after the flowers fade a new set of roots is sent out from the base of the bulbs, and on these depends the strong growth that is to produce flowers the next year. If planting is delayed until spring the bulbs have a double task to perform—that of getting established and of maturing the flowers; bad results are more likely to be seen the second year after planting than the first. American-grown bulbs are preferable to those grown in Holland, where the growers lift the Lilies and subject them to a system of drying before shipping. The effect of this treatment is seen in the pink tint the bulbs usually have on arrival here, and with every particle of the roots cut off many bulbs die before getting established. The Japanese know their business better, and encase each bulb in a clay covering; they are then closely packed with dry soil sifted in between. Japanese bulbs come here in fine order, often with a mass of live roots ready to start into growth as soon as they are planted, and losses are thus reduced to a minimum.

Those who intend to plant permanent beds of Tulips should now prepare places for them. The new Darwin Tulips are a decided acquisition to the garden, perfectly hardy, of rich coloring, having stout stems for cutting, and they will flower year after year. The Parrot varieties are also admirable in the border, but are not so good for cutting, owing to their weak stems; the colors are brilliant, with unique and fantastic shapes. Our Parrot Tulips have flowered for three years in the same bed without disturbance, and promise to do equally well next season.

South Lancaster, Mass.

E. O. Orpet.

Dutch Bulbs.

THERE is no commonplace annual garden task more satisfactory than the planting out or potting at this season of the Dutch bulbs, which are now at hand. These are bulbs of few families, indeed, but of infinite variety of form and coloring, many of dazzling splendor. They flower, too, at a season when bright flowers are most acceptable. Even the readers of horticultural journals sometimes neglect their opportunities, and it seems well to remind the negligent that now, and not spring-time, is the season for planting Hyacinths, Tulips, Daffodils, Crocuses, Scillas, Snowdrops, Snowflakes, bulbous Irises, etc. With no other material can we secure such a wealth of charming flowers with so little trouble and such slight expenditure, while all of those mentioned are hardy, and if not forced will increase from year to year. Still, it is not well to depend on old Hyacinths and Tulips, grown even in the open, under ordinary conditions. Additions should be made each year to the stock of these, for they usually degenerate unless carefully cultivated.

As to planting bulb beds, while a mass of color is always enjoyable in the spring-time, it does not seem to me worth while to plant on the system so popular with the makers of catalogues. Such beds will, perhaps, answer in public parks, where systematic plans must often be followed from exigencies of labor, even if results are not of the best. To copy park effects in a private garden is on a par with garnishing one's table on the plan of the restaurant. There is also a practical objection to planting a bed with only one variety of bulbs—that is, its beauty passes too quickly. In the case of Tulips, a bed is often ruined at once by a hard shower or a very warm day. Still, these things are a matter of taste, and the owner of the bulbs may fancy monotony and a glaring mass of color. My fancy is for informal plantings of

various bulbs, and my usual practice is to set out first any special clumps of species or varieties which, for some reason, it is desired to keep in masses. The smaller-flowered bulbs, of course, are placed toward the front. After the special features of the bed are adjusted, the various Tulips are all mixed together—Single Early, Double, Byblooms, Bizarres, Breeders and Parrots—and first scattered over vacant places, and then thickly planted where they happen to lie. A bed of this kind, while never a perfect dazzle during any one day, provides a long changeable succession of flowers.

But, before these bulbs flower, the potted bulbs will have provided the amateur with a long succession of blooms. With a good supply of potted bulbs, a few winter-flowering Begonias, a supply of *Primula obconica* and a few Ferns the conservatory or window-garden may be kept gay from December till spring-time. The details are in every fall catalogue, but it may be added that the flat pans, say, eight inches wide by four inches deep, provide usually the most satisfactory receptacles for flowering all the medium and larger sized bulbs. These pots are more sightly than the deeper ones, and hold sufficient earth. A pot of this size will hold four first-size Hyacinths, or six Roman Hyacinths or Tulips or Daffodils.

Elizabeth, N. J.

J. N. Gerard.

Crinum Moorei.

THE Natal Lily is one of the choicest of the bulbs which flower at this season. Though introduced more than twenty years since, and rapidly increased by offsets, it does not seem to be as yet common in gardens. The treatment required for the bulb is about that ordinarily given to the popular *Agapanthus*, and if it were as well known it would be in greater demand than this old favorite. It should be potted in good open soil and grown with as infrequent disturbance of the root as possible. It should be well watered and fertilized when growing and flowering, and in winter it may be rested in a moderate temperature without being allowed to become dry. The pleasantly fragrant flowers are large, the perianth segments being three inches long, and borne in succession to the number of from six to twelve on strong scapes three feet high. The flowers are white or pink. The former variety is still rare, or, at least, scarce, but the pink variety is very beautiful with a very clear pure color, and a touch of green at the bottom of the somewhat curved tube. The leaves are broad, rather soft, and easily injured. In this climate it will be well to keep it under cover till the season's growth is completed. After this the pot may be plunged in the open till the flowers are formed, and after, if it is desired to bloom the plant out-of-doors.

Crinum Moorei seems to be a half-hardy bulb, and possibly may be wintered out in a protected border south of this latitude. Here *C. longifolium* (*C. Capense*) is hardy when fully exposed, and I have wintered out *C. Powellii* without protection under the south wall of the house. *C. longifolium* does not seem to me especially valuable as an ornamental hardy garden-plant. Its leaves start early enough to be injured by frosts, and do not recover their sightliness. The white flowers are fairly good, but a *Funkia* is more effective, and produces more abundant flowers of similar size and color. *C. Powellii* is a hybrid between *C. longifolium* and *C. Moorei*, and seems to be hardy in such climates as prevail in the south of England. It may not prove to be satisfactory here outside, even in a sheltered place, and it seems only worth while trying the experiment in the hope of establishing a clump where it may have free root-run and produce noble leaves and many flowering stems. The safest culture would undoubtedly be in a deep pot or tub, which could be removed to shelter in winter. There are some eighty or more species of *Crinums* and several hybrids. They offer a wide and interesting field to the collector, but *C. Moorei* and *C. Powellii*, with their varieties, are the handsomest of the family, and should be the first ones secured.

Elizabeth, N. J.

J. N. Gerard.

Jelly Fruits.

THERE are few apples so likely to glut the market in a good bearing year as the Red Astrachan, but there is a way to dispose of the surplus—that is, they can be made into jelly. These apples are, by all odds, preferable to any of the crabs for this purpose, and make one of the very best of all sour jellies. It is an advantage, too, that the choicest fruit is not required for this preserve.

The wild gooseberry is not generally known to be of any special value except for marmalade. It does, however, make a jelly far preferable to that made of cultivated sorts. The

flavor is unique and spicy, and is pronounced by all who have eaten it to be next in quality to currant jelly.

In New England, where the Barberry grows very freely along the roadsides, its berries are used largely for preserves and jellies; but in other parts of the country their value is little known. It is said that dyspeptics can eat this preserve with impunity. The common Old World species, *Berberis vulgaris*, is now growing wild in the middle and New England states, and is preferable for beauty and use.

The healthfulness of the cranberry seems to be generally known, and its enormous consumption as a food shows how generally it is relished, but it is rarely used for a jelly so far as I have known, and yet it ranks very high for this purpose.

Quince jelly our mothers knew to be a luxury only to be brought out for the clergyman and select visitors, but very few persons in the United States know the excellent quality of jelly made of the Japan Quince, *Cydonia Japonica*. Many of the scarlet-flowering sorts bear no fruit, or very little, but there are varieties with white or flesh-colored flowers that bear abundantly. Some individual plants are very prolific. The jelly is very rich and nutritious. The fruit has an oily flavor, which goes over to the preserve.

Clinton, N. Y.

E. P. Powell.

Bush Lima Beans.—I agree with your correspondent in what was said of Henderson's Bush Lima, on page 347. It is distinctly earlier, and that is a great point in its favor, both for commercial and private gardens. This year, too, it has proved that it can endure drought better than any of its rivals, while its productiveness and persistence in bearing are both remarkable. When, however, your correspondent states that it is somewhat inferior in flavor to other Limas, he makes an admission which will condemn its exclusive cultivation in the home garden. In vegetables for the home table the best is never too good, and if there is a bean which is richer in quality no family in the country should be satisfied without a supply of the superior one. I believe that Henderson's Bush Lima is not a true Lima, but a Sieva Bean, and while these are excellent in flavor, they lack the very highest quality which is furnished by Burpee's Bush Lima. These large, fat beans, when served, are much more attractive in appearance than the Sievas, and beauty has its use on the table as well as elsewhere. In the final test of quality, their flavor and buttery consistence are unrivaled. I shall plant Henderson's Bush Lima because it gives me an excellent bean early in the season, but I cannot dispense with Burpee's Lima for late table use.

Flatbush, L. I.

Quis.

Muskmelon Emerald Gem.—This seems to be the best melon for home use in every particular, except size. It is thin-skinned, with deep salmon-colored flesh and a small seed cavity. Its outer skin is green, beautifully netted, and it is slightly ribbed. Its flavor is delicious, its flesh-texture of the very finest, and it has that melting quality which is only found in melons of the very highest quality.

Hackensack, N. J.

R. A.

Lilium sulphureum.—This handsome Lily, first distributed as *L. Wallachianum superbum*, has as yet not been very plentiful, but it is so rapidly increased that it should soon be more common. It bears bulblets freely in the axils of its leaves, and if these bulblets are at this time set in moist earth they quickly put forth roots and grow away rapidly. It appears that if they are dried off and not planted till later they either germinate slowly or not at all.

Newark, N. J.

G.

Old Varieties of Apples.—Few of the newer sorts of winter apples surpass in quality and other favorable points the old Roxbury Russet. Those who are planting large orchards would do well to consider it. The tree is a rapid grower and of a spreading habit. I have specimens, however, grafted high that reach a height of thirty-five feet. The limbs are strong but somewhat brittle, and care must be used not to have the trees injured with ladders. The crops are annual and abundant, and, what we must consider of great importance, the fruit keeps all winter and keeps well. As for quality, we have nothing to surpass it for baking, and few to surpass it for cooking. These russets should be picked rather late and stored at once in a cool, moist cellar, unless shipped. With me the two best-keeping apples are the Kirkland and the Roxbury Russet. I have been pleased and surprised to find the demand increasing for the old Black Bellefleur. This, when grown in very open orchards, is not the dry and mealy object that it is supposed by many to be, but is yellow-fleshed and juicy. The market demand is not strong enough to place it

on a par with Northern Spy and Baldwin, but the increased demand for it warrants the planter in including the Bellefleur among profitable sorts. A third of the old apples that deserve renewed attention is the Westfield Seek-no-further. The quality of the apple is very good for the table, and it ranks with the preceding among those who like fruit with mild and not too acid flavor. The tree is a moderate grower and shapely, while the fruit is almost always peculiarly fair. When apples in general fail we count on having Seek-no-further in good form.

Clinton, N. Y.

E. P. P.

Correspondence.

United States Nurseries, Short Hills, New Jersey.

To the Editor of GARDEN AND FOREST:

Sir,—A casual visitor to this large establishment always finds much to excite his interest, not only in the abundance of plants, but in their admirable arrangement, healthy appearance, and the general cleanness and order of the place. I did not expect to find early in September many flowering plants under glass, and it will be nearly two months before the Chrysanthemums, for which this house is famous, will be at their best. Plants trained to single stems and specimens in pots were, however, in excellent condition for coming exhibitions. The great block of houses devoted to Palms, Ferns and other foliage-plants were filled to repletion, the more common Palms, like Phoenix, Latania, Areca, Kentia and Cocos, being grown by the thousand. Among the less common species I observed a fine lot of *Acanthaphoenix crinita*, a highly decorative species with the lower sides of the fronds of a silvery glaucous color and the plant generally furnished with many black spines. *Pritchardia Thurstonii* and *Pinanga Kuhlii* are likely to become favorites when they are generally known. *Cocos gracilis*, while scarcely as light and airy in habit as *C. Weddelliana*, makes a valuable plant on account of the tougher texture of its fronds.

In the large collection of *Araucarias*, besides the thousands of *A. excelsa*, were many striking varieties—among them, *A. Baumannii* and *A. Cookii*, with short branches, and *A. excelsa glauca*, with handsome silvery leaves. Among the Ferns healthy plants of *Adiantum Farleyense* fill two large houses and part of a third. The variety *plumosa* of *Nephrolepis exaltata* appears to be one of the most beautiful Ferns in cultivation. The variety *Smithiana* of *Pteris tremula* and *Smithiana densa* are beautiful and promising novelties.

Passing by the magnificent specimens of arborescent and other stately Ferns like the *Alsophilas*, *Cibotiums*, *Dicksonias* and *Cyatheas*, I noted among miscellaneous foliage-plants the following desirable novelties: *Hoffmannia variegata*, *Margravia paradoxica*, the very distinct *Peperomia metallica*, the variety *striata* of *Heliconia aurea* and two *Tradescantias*, *T. regina* and *T. elongata*, both of which are improvements on existing varieties. *Strobilanthes Dyeriana*, sent out last spring from England, filled two or three sashes in one of the frames exposed to the full sun and without any glass to protect them. Under these conditions the growth was beautifully colored, and the plants seemed destined to wide use for bedding purposes. *Phrynium variegatum* was also flourishing in the open and was finely variegated, while coddled plants in a heavy shaded stove show little color. I have observed this plant used with good effect in window-boxes this year, and it ought to prove useful in subtropical bedding. A variegated form of *Oleander splendens* is a plant which will prove very effective in a large pot or tub. *Souvenir de Bon* is a decided acquisition among *Abutilons*. Its leaves have a white variegation encircling the green. *Cyperus laxus* is another variegated plant which will make a good companion to *C. alternifolius*. Among many *Rex Begonias* lately introduced, but not in commerce, I noticed as particularly interesting *Bertha McGregor*, *Kaiser Wilhelm*, *Elsie Coles*, *Dr. James* and *Walter Laing*. Among *Dracænas*, *D. Annerleyensis* and *D. Norwoodensis* were two of the best. *D. Neo-Caledonica* is a useful species on account of its leaves and hardy qualities. Its color is a dark green-purple at the base and at the extreme margin, and pink on the young foliage.

Orchids, which are known as one of the commanding features here, are seen in almost numberless variety, and the visitor will find hardly a sickly plant in the entire lot. Thousands of plants of *Odontoglossum crispum* were in most vigorous health, with *Cattleyas*, *Cœlogynas*, *Lælias*, *Dendrobiums* and the other large genera all represented by immense numbers of sturdy specimens. The collection of *Cypripediums*, which is well known as unexcelled in number and

variety, and the thousands of seedlings in various stages of growth are well worth study. September is not a month when one expects to find many Orchids in bloom, but among the *Cypripediums* I noted in flower *C. gigas*, *C. Charlesworthii*, *C. lo*, *C. Io grande*, *C. Parishii*, *C. Schomburgkianum*, *C. Dayanum*, *C. superciliare ornatum*, *C. Ceanothus superbum*, *C. Allanium* and *C. niveum*. Hundreds of plants of *Dendrobium grande* were in flower or bud, while of the few *Cattleyas* in bloom *C. Chrysotoxa* was the best. The so-called Tooth-brush Orchid, *Dendrobium secundum*, was showing numerous small yellow flowers, while *Oncidium incurvum* and *O. ornithorhynchum* were in good bloom.

In several acres of ground devoted to hardy perennials the plants were suffering severely from the long-continued drought, and few varieties were blooming to satisfaction, although there was much to admire among the different kinds of *Helianthus*, *Hibiscus*, *Phlox paniculata*, *Liatris*, *Boltonia asteroides*, *Platycodon*, *Stalice*, *Sedum*, *Delphinium Sinense* and *D. formosum*. A variegated variety of *Ajuga reptans*, which grows from two to three inches high, with a white zone enclosing a green centre, is a hardy plant of rapid growth, and since it is easily propagated it ought to be very effective for carpet-bedding and for the garden.

Taunton, Mass.

W. N. Craig.

Meetings of Societies.

American Forestry Association.—III.

FOREST-FIRES IN SOUTH JERSEY.

MR. JOHN GIFFORD, of May's Landing, New Jersey, a member of the State Geological Survey, in a paper on this subject, described the part of the state subject to these fires as that portion extending southward from a line drawn from Long Branch to Salem, an area of some twenty-five hundred square miles. Excepting the land along the shore and in places along the rivers and railroads, this large area is an almost unbroken stretch of forest. Much of the territory, often called the Southern Interior, is in an impoverished condition, due mainly to forest-fires. The land is seldom more than 150 feet above the sea-level, and is drained by several rivers, the sources of which are all in bogs and swamps within its own borders. The burning of the woods, therefore, seriously affects the water-supply of all this region, the failing of which has recently caused much difficulty. The soil is sandy loam and gravel. Much of the land is fit for cultivation, and the rest is coarse white sand mixed with small quartz pebbles. Broad stretches of territory would be deserts of shifting sand were it not for the trees which hold it in place, and these plains should be left permanently wooded.

On the upland the Oak and Pine, mainly *Pinus rigida*, are cut for cord-wood, and on the lowlands or "islands" in the swamp excellent timber is furnished by these same trees when they escape injury by forest-fires. White Cedar is the most valuable wood in south Jersey for lumber, but, owing to the forest-fires and an increasing demand for it, it is becoming scarce, and the bottoms, where this tree once grew abundantly, and which are natural reservoirs for water, are now usually turned into Cranberry-bogs when suitably located. The so-called swamp-forests consist mainly of a dense growth of Sour Gum, Swamp Maple, Pitch Pine, *Magnolia* (*M. glauca*), *Liquidambar*, Oaks, and occasionally trees of other species. Owing to difficulties in getting out the timber, the swamp-forests are seldom cut. Marsh-lands, sometimes called savanna-lands, are at present worthless. These are covered with low bushes, grass and a few straggling trees. It is believed by many that when forest-fires are stopped these marsh-lands can readily be seeded, and that they will support a growth of White Cedar, which will do much toward increasing and regulating the supply of water.

There is scarcely a square mile in the southern interior of New Jersey which has not been burnt over by forest-fires during the past five years, and the fires this year were more destructive than in any preceding years. These forest-fires are mainly set in one of four ways: 1, by incendiaries; 2, by locomotives; 3, by careless brush-burners; 4, by lightning. The fires set by locomotives can be prevented by the use of a spark-arrester; by having places especially prepared for the dumping of hot coals and by clearing and plowing the land along the railway. Often, however, to produce a better draft, the arrester is withdrawn or holes are made in it, and hot coals are carelessly dumped where they quickly generate a fire. As evidence that fires can be prevented by observing the above precautions, Mr. Gifford stated the fact that while the officials

of a railroad in that part of the state were the owners of woodland bordering the track not a single fire was set.

The land along the railroads has been burned to such an extent that there is little danger of a fire gaining much headway there now. The most serious danger is from lawless men who kindle forest-fires to hide their thefts of timber. The worst fire of this season, supposed to have been deliberately started, burned over 60,000 acres, besides destroying several houses, and a fire near McKeetown destroyed woodland growth on 12,000 acres. The latter fire escaped from a workman who was burning brush. A large foreign element has come to south Jersey to clear farms, and this considerably increases the danger of fires from burning brush. On the other hand, sections of cleared land serve to check the headway of a fire.

Young timber is usually killed to the ground by forest-fires. Large timber recovers, but its vitality is reduced, and the charred wood is disagreeable to handle. Only a small quantity of large timber is now standing in south Jersey, though Jersey Hard Pine was once plentiful. Ships timbered with it in 1861 are still perfectly sound. Here and there in a swamp a large Pitch Pine may still be seen. Old Heart Cedar is noted for its durability, but now for fear of destruction by fires lumbermen cut it in a sappy state when it is fit only for laths and shingles; and for fear of fire, Cedar is usually cut as soon as it is big enough for rails or even hoop-poles. The shoots which spring from the roots of burnt Oak were used for hoop-poles a few years ago, but now, owing to the substitution of bags for barrels and iron for wooden hoops, there is practically no demand for them.

The desolation of this country is mainly caused by forest-fires which have swept over it for many years. When a fire passes over a scrubby growth on sandy soil it not only burns the leaves and wood, but even devours the organic matter in the surface soil. The soil becomes scorchingly hot, and the ashes thus produced are quickly beaten through the porous earth and nothing is left but a bed of sand and charred sticks. While only gnarled and stunted Oaks and Pine survive on land repeatedly burned over, very large Tulip-trees and Beeches are not uncommon on islands in the swamps. Fire is especially destructive to Cedar, for not only does it ruin the standing timber, but it burns deep down into the bottom. Cranberry bogs, which are usually located on Cedar swamp-bottoms, are also much injured by fire. It is necessary to dig deep trenches to check its course, since it burns several feet into the peat and appears here and there in unexpected places several yards away.

A careful estimate places the number of acres of woodland in New Jersey burnt over during the past six months at 200,000, including many houses and other buildings, bogs, swamps and corded wood. Besides this, the consequential damages are much greater. When fire is discovered, the owner of the land, if he happens to be near, gathers together a few men and hastens to fight it. If it has gained much headway he is powerless to stop it, and if by change of wind it shifts to another man's property he leaves it and no longer concerns himself about it. Men are soon exhausted with the heat and smoke and often receive little or no recompense for their work, and many land-owners claim that there is much difficulty in procuring competent men, and unskilled persons often do more damage than good. It requires cool-headedness and an accurate knowledge of the region to successfully combat a fire. By back-firing in improper places fires gain strength. In spite of the continuity of the woods a fire is more easily controlled in south Jersey than in a mountainous country. Roads are excellent points of vantage, and if properly trimmed are generally sufficient to check fire. If the wind is high the sparks are often carried long distances, and fires themselves move at a rapid rate, creating a strong draft and roaring like the ocean, but in ordinary fires a road or a stream, or even a spur of swamp, is sufficient to check their headway. It is highly important, therefore, that overseers keep the brush from the sides of the road.

A recently enacted law provides a fire-marshal, who is charged with the control of all fires occurring in his township. An observation tower and telescope give a view over almost any township in south Jersey, and the marshal is empowered, on the discovery of a fire, to employ and pay any required number of men to help in putting it out. It is believed that every fire can be checked by this means before it has gained headway. A society for the prevention of forest-destruction is now being formed which will consist mainly of land-owners, who will appoint an agent to insist upon the enforcement of the law and to see that the marshals do their work properly and that malicious fire-setters are punished.

Notes.

One of the plants of the Victoria Regia, in the Lily ponds of Messrs. Tricker & Co., Clifton, New Jersey, last week had seventeen leaves, two flowers open and seven visible buds.

The first chestnuts of the season appeared in this market last week. They came from the high lands in Ulster County, this state, where it is said there had been a frost which opened the burs.

For the first time this year the large Spanish onions are in the market. They retail at five cents each, but since there are between 60,000 and 70,000 crates now on the ocean, destined for this port, they are likely to be even cheaper.

Notwithstanding the dry weather this summer, the Scarlet Thorns are fruiting with unusual abundance in the neighborhood of this city, and many of the trees are so bright with ripened fruit now that they make a conspicuous display in roadside thickets.

We have received the leaves of a Hickory-tree which are prematurely browned in patches, and Professor Halsted identifies the trouble as a parasitic fungus, *Gleospodium Caryæ*, which is quite common. We recently observed three Hickories standing in a row, and so close that their branches touched. The middle tree was so badly affected that the leaves all seemed dead, while the trees on either side of it were perfectly healthy. It is possible that in such cases the affected tree may have some constitutional weakness.

The eighth annual convention of the Association of American Cemetery Superintendents was held last week in Philadelphia. The meeting was successful in point of attendance and in the character of the papers read, and it was made particularly interesting by visits to Fairmount Park, Laurel Hill and West Laurel Hill Cemeteries, and to Harleigh Cemetery, in Camden, New Jersey, which is conducted in accordance with advanced modern methods and is considered a very satisfactory work. O. C. Simonds, of Chicago, was elected President for the ensuing year; George W. Cressy, of Salem, Massachusetts, Vice-President, and Frank Eurich, of Toledo, was re-elected Secretary. The next meeting is to be held in Richmond, Virginia.

To a correspondent who inquires as to the proper amount of fertilizers to be applied to Peach-trees we can only say that different amounts are needed in different soils. In some good orchards in New Jersey one hundred and fifty pounds of muriate or sulphate of potash and three hundred pounds of ground bone to the acre are applied broadcast every year. Professor Voorhees, of the New Jersey Experiment Station, does not recommend the application of fertilizers until the trees come into bearing. This direction presupposes that good cultivation has been practiced from the beginning. Where nitrogen is not supplied by turning under Crimson Clover or some other leguminous crop, nitrate of potash is sometimes used at the rate of one hundred to one hundred and fifty pounds per acre every year.

Very rarely does one see such a rapid transformation in scenery as that which took place within three or four days after the recent rains in this vicinity. The rainfall was abundant and thoroughly soaked the hot ground, while the close, moist air which succeeded produced exactly the conditions which prevail in a propagating house, and the grass blades started from the roots with unusual energy. Four days after the rain the burned lawns of Central Park were as green as they ever were in May, and Morningside Park, where the turf had been to all appearance absolutely dead, was carpeted with tender green, even to the verge of the rocky ledges. The change strongly enforces the argument for providing a water-supply which we made last week. These public grounds could have been made to smile with the same beauty all through the long drought if adequate means for irrigation had been provided.

Two or three correspondents have written about the Morning-glory known in California as Heavenly Blue (*Ipomœa rubro-cœrulea*), to inquire whether it can be grown in this latitude. There seems to be no trouble about this, and although Mr. Sturtevant stated that it begins to flower late, we have seen plants in Jersey City which have been producing flowers in abundance since the 1st of September. The seed should be sown under glass in small pots in March, and the plants should be carefully hardened off before setting them out-of-doors. This should not be done until the ground is

thoroughly warm—that is, not before the middle or latter part of May in this latitude. If the plants have become somewhat pot-bound they will be all the better for it. When the hot weather comes they will make a rampant growth, and soon climb up twenty feet if they have a chance, and every morning they will produce numbers of flowers of the rarest blue and from three to three and a half inches across. The rich green of the foliage of the plant and the depth and purity of the color of its flowers make it a striking object at this season.

The effect of heavy rain and wind storms in New Jersey ten days ago is seen in an oversupply of windfalls, and the lessening stock of good peaches from that state. The grades known in the trade as small, common and prime find a slow wholesale market at from thirty to seventy cents a basket, while grades known as best line and fancy range from seventy-five cents to a dollar and a half a basket, which means considerably higher prices for the retail buyer. The season for Bartlett pears is also coming to a close, and later varieties, as Anjou, Bosc, Louise Bonne and Sheldon, are now offered. Receipts of California fruits are becoming smaller, fifty-one car-loads constituting the supply in this city last week. Among some twenty distinct varieties of California peaches noted in the markets are Crawford's Late, Lemon Cling, the popular and showy Susquehanna, Ward's Late, a white peach, juicy and of rich flavor, Picquet's Late, a yellow free-stone, and George's Late, a large yellow peach, striped and splashed with bright red and counted among the best peaches for shipping. Gros, Hungarian, Kelsey, Silver and Fellenberg prunes are among the latest varieties of this fruit seen here, with Coe's Golden Drop plum, a favorite for canning.

In the branch of the Florida Experiment Station which has been established at Fort Myers, in Lee County, many experiments are now being made to test the value of tropical products in that climate. It is stated in a report just published that that part of Florida produces larger and finer Pineapples, Avocado Pears, Sapodillas and Guavas than are grown in Cuba and other tropical countries. The reason for this may be due to the fact that the rainy and dry seasons are neither of them so severe as they are within the tropics and that the cooler winters give a longer season of rest, after which the plants grow off vigorously like northern vegetation with the return of spring. The experiments made with the Cocoanut at this place have been very encouraging, and the superintendent asserts that he can see no reason why that part of Florida should not produce all the cocoanuts needed for supplying the United States. Other fruits that are giving promise of success are the Cherimoya, the Star Apple, the Date Palm, the Spanish Lime, which is not a citrus fruit, but, botanically, *Melicocca bijuga*, the Sour Sop, the Cashew-nut and the Tamarind. Thus far the Mango and the Mangosteen, the Mammee Apple, the Sapota and the Bread Fruit have not given much promise of success.

A bulletin which has just been sent out by Professor Mark W. Harrington, Chief of the Weather Bureau, gives the opinions gathered from many shippers of perishable products throughout the country in relation to the proper protection of fruits and vegetables by heat and cold during transportation. These men generally concur in the statement that the danger in transportation from freezing has been eliminated by modern methods. The so-called lined car, which has a partition of tongued and grooved boards at the sides and ends, placed so as to leave an air-space of about four inches, answers for spring and autumn and during most winter weather, while the Eastman heating-car in extreme weather has proved a perfect protection. Perishable goods can be shipped with safety in ordinary freight-cars when the outside temperature is twenty degrees, Fahrenheit, and in refrigerator-cars when it is ten degrees. Fruit wrapped in heavy brown paper will endure fifteen degrees more cold than if it is not so wrapped. Dampness is very injurious, and products which are shipped in a dry condition can endure a much lower degree of temperature without injury than under moist conditions. It should always be remembered that the kind of packing which keeps out the cold will keep in the heat, so that there is often more danger from heating by process of decomposition than from injury by the cold. When a north wind is blowing on the prairie, cars which contain fruit are often covered with canvas on the north side. Oranges that have been frozen may be thawed without injury by putting them in cold water or in tight barrels immediately after arriving, allowing them to thaw out gradually. These are some of the points picked almost at random from what is altogether a most instructive circular.

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The Distribution of Seeds by the Department of Agriculture.

THE report of the Chief of the Seed Division of the Department of Agriculture for 1893 shows that the cost of this distribution during the fiscal year amounted to \$160,000. More than 7,700,000 packages of seed were sent out, so that they cost something like two cents a paper, besides the expense of transporting through the mails more than two hundred and seventy-five tons of matter. It was more than half a century ago when the Commissioner of Patents began to send out a few improved varieties of seed to certain farmers at his own expense, and a small appropriation was made a few years later to aid him in this object, which at that time may have been praiseworthy. The money was voted for the purpose of giving the farmers and gardeners of the country an opportunity to try seeds which were new, so as to ascertain whether they had any practical value over those already in use. But of the 387 varieties sent out last year many of them were so common and well known that they hardly required the formality of printing their names upon the package.

The abuse has grown to its present dimensions in the face of constant protest, since there never was any excuse for sending seeds of Turnip or Cabbage, which could be bought at any country store, and even this outrageous violation of the intent of the law has been carried on with fraudulent accompaniments—that is, very often the seed of common plants which has been sent out has been worthless, and oftener than not it has been purchased at extravagant prices. To justify the practice it was urged that it was worth while to test common seeds in different regions to ascertain their relative local value, and, therefore, the various packages distributed contained plainly printed requests that the receiver should make trial of the seed enclosed and report the results to the Department. The chief of the division, assuming that five papers were sent to each person, estimates the number of recipients of the seed at about a million and a half of persons. In spite of the fact that every one of these was requested to give an account of his experience, so that an intelligent report

might be furnished the following year, less than one out of a thousand acknowledged the courtesy of the Government by sending a line to Washington. These few reports were couched in vague and indefinite language, and conveyed no useful information as to the time of planting, character of soil, method of cultivation or adaptability to climate, and they were considered so utterly useless that they have never been published.

Secretary Morton has been making a praiseworthy effort to abolish this senseless and extravagant practice, but notwithstanding this the last Congress voted money to continue the abuse. The people have been assured that the Secretary will interpret the words "new and valuable seeds" according to the original intent of the law and will send no other. Even with this restriction the distribution is now needless, since our enterprising nurserymen and seedsmen are alert to procure and test every new plant which has any promise, and their catalogues, as well as our periodicals devoted to agriculture and horticulture, keep cultivators thoroughly informed as to novelties. Every intelligent man in the country ought to support the Department in this view of the case. Mr. Fagan, Chief of the Seed Division, in his report states what every one knows to be true, that for many years no useful purpose whatever has been served by the continued enlargement of the quantity of seed annually bought and its indiscriminate distribution to those who, by accident or design, become the recipients of this gratuity. If it was ever a useful practice the conditions have changed since the time when there were few propagating gardens or seed-farms in the country. Private industry and private capital have now built up establishments for raising new and valuable seeds and for propagating rare plants and flowers, so that there can be no possible loss to agriculture or horticulture incurred from the abandonment of this business by the Government.

There can be no doubt that the Secretary of Agriculture is thoroughly right in his contention that this seed division has outlived its usefulness, and we heartily agree with the statement of Mr. Fagan, that this distribution of seed is altogether wasteful, and that the continuance of the practice is an infringement on the rights of citizens engaged in legitimate pursuits.

Preparation for Spring.

AS the year is mellowing into autumn, with its indescribable, although somewhat pathetic, charm, we must not forget that the keenest delight a garden brings comes with the bursting forth of new life in the early year. Each season brings its special pleasure and satisfaction, but if we devote ourselves to specialties it is the spring garden which we have always advocated as peculiarly adapted to American habits and American climate, and, of course, all the preparation for this must be made before the long winter comes, when hardy plants are resting from their labors. The perennials which flower early have already stored up in bulb and root the material for new flowers, and now is the time to reset them where any change of arrangement is needed, so that they can become established before freezing weather, and be ready to unfold their beauty when they are warmed into active life once more.

In our cultural notes we have tried to give, from time to time, directions which will aid in the selection of varieties, and suggestions as to the proper treatment of each, and our present purpose is simply to remind our readers that there is work now to be undertaken if we are to look forward with any reasonable expectation of success in the garden next spring. The seeds of many early-flowering plants ought to have been sown long ago, and we should already have stout seedlings of Rock Cress, Spring Adonis, Primulas, Daisies, Aquilegias, Larkspurs, Iceland Poppies and many more for next year's flowers, but if we have neglected to do this at the proper season, plants of the

most popular varieties can all be bought of our growers. If it has been our purpose to try some of the rare species of Tulips or the new or rare varieties of Narcissi, Fritillaries, Scyllas, Ornithogalums or other plants of this class, we should have ordered the bulbs months ago from European houses, as was recommended in these columns at the proper time. But our own dealers keep a large stock of the most approved varieties, so that every garden can be furnished with great abundance and variety. Indeed, the best way for one who is something of a novice is always to buy of American seedsmen, and if he wishes to enlarge his collection he can study the European catalogues another year and order his seedsman to import for him such varieties as are not kept in stock here.

The point to be emphasized is that we cannot have a spring garden if we wait until spring to make it, any more than we can have a corn crop by planting the seed in autumn. There will be many bright days yet, but every hour of growing weather will be needed to prepare our plants for facing the winter in good condition, so that they will promptly respond to the first impulse which comes with the annual resurrection in spring. A good gardener must always be working for the future, and sometimes for the distant future, and this discipline of forethought and patience and hope is not the least of the advantages which come to him who tries in earnest to make the most of his opportunities in a garden.

Carpet Bedding.

WHSOEVER has listened to popular criticism of the gardening in a public park has observed that no part of it attracts so much attention as the bedding plants, and especially those which are worked into what are known as carpet or pattern beds. The reason is not far to seek: here are striking displays of bright and even gaudy colors, formal and pronounced lines, or ingenious imitations of all sorts of objects. All this appeals at once to the average beholder who has never learned to grasp firmly the elusive principles of beauty in any composition; it gives something that the eye catches and the mind comprehends without exertion; and the admiration so easily excited finds ready expression in words. This kind of popular sentiment as to gardening-art is, of course, to be deplored. It takes pleasure in garish colors and strong contrasts, and shows a degree of taste not much higher than that of the child who is fascinated by the glitter of an express-wagon painted bright red and blue. It recognizes with satisfaction the skill of the artist who has developed something like a portrait of Columbus or Cleveland out of thickly planted *Alternantheras* and *Pyrethrums*, or has fashioned a map of the world or man-of-war out of *Houseleeks* and *Echeverias*. It is not the accuracy of the resemblance to objects animate or inanimate which these plants show in their uncomfortable positions; it is not the fact that the thing is done well, but that it is done at all, that excites admiration. It is like the satisfaction of the crowd at a display of fireworks when the likeness of some public man is blazoned in many-colored lights. "There's George Washington! there's his wig, and there's his chin! How clever!" Yet the portrait is of the rudest kind.

Pattern bedding is every season producing imitations of endless objects, from a spray of leaves to a butterfly, and from a roll of carpet to a pair of gates. Numberless designs are wrought out in curved and straight lines, and sheets of pronounced color all through the land; very few can be said to have any genuine artistic merit. This kind of gardening, therefore, having been now practiced for many years, would seem to be a failure. As an imitative art (if there is such a thing as imitative art) it is certainly a failure. Probably nobody ever tried it as an idealizing art, so that there appears at first that little is left for it to do.

And yet formal gardening provides material for artistic effect which natural gardening does not furnish. It can command defined lines of any shape, and even masses

of color brilliant or subdued; surely these are resources of great value when directed by cultivated taste. That material of this kind can be useful and sufficient for beauty appears on the walls and floors of every house where there is a carpet, picture-frame or wall-paper of formal design. There is nothing essentially crude or vulgar in masses of brilliant hues, as Titian and Raphael well knew when they clothed their Madonnas and nobles in robes of gorgeous red and blue. But when they had the boldness to use the most glowing pigments as the motive for an entire picture, they had the skill which enabled them to adjust all accessory and surrounding tints to increase its brilliancy and decrease its garishness. And until the artist in red and yellow *Alternantheras* has acquired a perception of color-proportion in some degree analogous to theirs, he will be always liable to make elementary mistakes, however thorough his knowledge may be in the formidable nomenclature of his materials; for the average carpet-bedder is to the artist what the color-grinder is to the painter. Even the dullest planter is fairly safe in combining herbaceous plants and flowering shrubs, though of the most vivid hues, for Nature, if left to herself at all, will generally refuse to produce ungainly contrasts of form or color; but any one who meddles with the level and unbroken masses of shorn bedding-plants throws away this ready-made means and seizes special tools that none but peculiarly skilled workmen understand the use of. It is not wonderful, then, that there are so many costly and laborious compositions in public parks and on private lawns which earn and deserve no more than a smile of astonishment or contempt.

It need not be assumed, however, that the devising of neat and appropriate formal bedding cannot be achieved without a high degree of artistic skill. Plenty of color schemes are accessible to the study and application of any one with a fair amount of artistic feeling. A designer thus equipped will use his materials, not with a view to violent contrasts, but harmonies of tints, and will be able to produce an arrangement of lines and tones at once seemly and striking and restful to the eye, instead of tiring. Beds of this kind, which are not puerile caricatures of unsuitable objects or conflicts of hostile colors, have their own peculiar uses, to which nothing else is quite so well adapted. There are various phases of what is called architectural gardening, where terraces, stone balustrades and edgings and rectangular lines of walk prevail, where these regular curves and surfaces of clear color seem in peculiar harmony with the shaven turf and geometrical lines. There are places at the angles of roads or walks, and the junction of them with buildings, which suggest a regularly plotted scheme of *Alternantheras* or *Echeverias* to fill out and consist with the pronounced forms all about them. And in places such as these, where preciseness and formality seem to be suggested by the surroundings, a bed of sheared plants in regular lines may be used for the sake of its own beauty and the contrast it affords to less artificial forms of gardening. But where a red and yellow star or a multicolored Catherine-wheel is apparently dropped into the middle of a lawn, it is an excrescence, for whose existence no possible excuse can be found.

If bedding in set forms, therefore, is to be really an adorning of our gardens, it must be kept to its right place. It must be made to show its resources not so as to call up vain comparisons with incongruous things, nor to intrude mere meaningless patches of red and blue into quiet expanses of turf. Probably the highest success in work of this character will be found along the line of the most conventional imitation of suitable objects. The forms we see everywhere carved in stone, stamped on book-covers, woven into fabrics, worked in wood or metal, were derived originally from the lines of a leaf or plant, or from some simple geometrical figure, a circle or triangle, all of them modified to best suit the material in which they are used. Designs developed in this way, guided and re-

strained by the capacities and limitations of plant-growth, would probably result in something coherent and entirely new; and it may be that thought unhampered by precedent along such tracks as these will reveal to somebody that there are possibilities in carpet bedding which will develop it into what as yet it has rarely become—a thing of meaning and consistent design, and, therefore, in itself beautiful and desirable.

Pittsburgh, Pa.

H. A. Caparn.

Native Trees and Shrubs about Montreal, Canada.—I.

IT is a generally recognized fact that the vegetation of any locality supplies the best and most comprehensive indication of the character of the climate. Of course, such an estimate must be comparative; we must have some other locality or localities in mind in order to appreciate resemblances or differences. It is probably safe to say that most persons who have never visited Montreal and vicinity, in the Province of Quebec, have an idea that the climate of the district is much more severe or arctic-like than it is shown to be by the plants which naturally grow there. Of course, the region cannot be compared properly with maritime European localities in the same latitude, but subject to the warm influences of the Gulf stream, for most such places having the latitude of Labrador enjoy a climate in which trees and shrubs can be grown which could not withstand the winters of Montreal, several hundred miles farther south. A glance at any isothermal chart of North America shows that the St. Lawrence River valley enjoys a somewhat more moderate climate than the territory on either side of it in the same latitude; and, accordingly, we find corresponding differences in the character of the natural vegetation and in the crops which can be grown. The flora is fairly considered Alleghenian in character.

To give an idea of the winter temperature at Montreal it may be stated that the McGill College Observatory records show a mean annual temperature of about eighteen and a half degrees, Fahrenheit, for the months of December, January and February during the ten years from 1870 to 1880, and in the last six of these years the extreme was something under twenty-five degrees below zero of Fahrenheit. The McGill College being situated in the shelter of the city and mountain, the temperature of the country outside may be taken as often several degrees colder. Temperature of thirty degrees below zero is uncommon.

The following list of trees and shrubs, growing naturally on the island of Montreal and the country on the southern mainland opposite, is by no means complete, but will serve to show better than anything else the character of the climate. The list is merely an enumeration of the species noted from time to time, with little attempt at exploration. I have never seen the flora of the shores of the river on the north side of the island, and most of the species recorded have been observed in the woods of the Caughnawaga Indian Reservation, and near the mouth of the Chateaugay River, opposite Lachine and St. Anne's, on Montreal Island.

As this is mostly a limestone region, in which plants of the Heath family do not thrive, the absence of members of this group will be noted, but there are points within twenty or thirty miles of the city of Montreal where Blueberries, Cranberries and other Ericaceæ are abundant.

Clematis Virginiana, the common Virgin's-Bower, is abundant in many localities.

Menispermum Canadense, or Moonseed, is not rare, the slender stems often clambering over stumps, rocks or shrubs. It is a pretty twiner here as elsewhere, with clean attractive foliage, and very hardy.

Berberis vulgaris, the common Barberry of Europe, is, of course, not native, but seems to be naturalized in some places.

Tilia Americana, Basswood, is plentiful, and grows to a fine timber size. The honey made by the bees when the trees are in flower is distinctly "Basswood honey."

Xanthoxylum Americanum, Prickly Ash or Toothache-tree, occurs along fences, in neglected stony fields and along the borders of woods as a shrub from five to ten feet high. It is sometimes medicinally used by the natives.

Ilex verticillata, Black Alder or Winterberry, is abundant in moist places. *Nemopanthes Canadensis*, Mountain Holly, is found in swamps.

Celastrus scandens, the Climbing Bitter-sweet or Wax-work, grows abundantly in rocky limestone soils, climbing over Hawthorns and other small trees; the fruiting plants are very handsome in autumn and winter.

Rhamnus alnifolia, a dwarf inconspicuous Buckthorn, is found in moist places. *R. cathartica*, the common Buckthorn of Europe, is quite hardy about Montreal, attaining the stature of a small tree, but so far as I know it has not really escaped from cultivation and become naturalized, as it has in some parts of the country. *Ceanothus Americanus*, the New Jersey Tea, occurs on the south shore of the St. Lawrence.

Vitis riparia is the common wild Grape of this region. The small blue-black fruit is gathered in large quantities in the autumn and sold in the Montreal market either for domestic use or making a sort of wine. The flowers are very fragrant. *Phylloxera* often occurs in abundance on the plants, but they generally seem to bear the disease without very serious inconvenience, although the fruiting of the plant must be affected. *Ampelopsis quinquefolia*, the Virginia Creeper or American Ivy, is common, and is often collected and planted for ornamental purposes.

Acer Pennsylvanicum, the Striped Maple or Moosewood Maple, is abundant. Planted singly it forms a neat ornamental little tree. *A. spicatum*, the Spiked Maple, is also locally called Moosewood Maple, and forms thickets of many-stemmed plants from ten to fifteen or more feet high in moist localities, where the next two species occur. The bark has some resemblance to that of the young Sugar Maple-trees, and plants of *A. spicatum* have sometimes been sold as Sugar Maples in Montreal market, of course to the disappointment of the purchaser, as the Spiked Maple never becomes a large and well-proportioned tree, and is considered practically worthless. *A. rubrum*, the Red or Swamp Maple, is very abundant in all swamp-lands, and lends the richest effects of coloring in the early autumnal landscapes. *A. (dasycarpum) saccharinum*, the White or Silver Maple, may be found growing plentifully in similar situations as the Red Maple, but it becomes a larger tree. Both species are often extensively tapped for their sap in spring, although this sap is not nearly as rich in sugar as that of the Sugar Maple, and is, therefore, more costly to manipulate, and is only collected when an abundance of the other cannot be had. *A. (saccharinum) barbatum*, the Sugar or Rock Maple, forms fine groves throughout the country around Montreal, and among them are many stately old specimens which have borne tapping by the primitive axe or gouge, and the more modern bit or auger, for a hundred years at least. The so-called variety *nigrum* apparently also occurs, but no sharp line of distinction can be drawn between the species and variety.

Rhus typhina, the Stag-horn Sumach, is very abundant in some localities, and occasionally forms small broad-spreading trees with stems ten inches in diameter. *R. glabra*, Smooth Sumach, occurs in the Caughnawaga Indian woods, on the south side of the St. Lawrence. *R. Toxicodendron*, the Poison Ivy, is common.

Robinia Pseudacacia, the common Locust, though not native, has escaped from cultivation in some localities. It becomes a fair-sized tree, and is as liable to destruction by borers as it is farther south.

Prunus nigra, the wild Red or Yellow Plum, which was included under *Prunus Americana* in Gray's *Manual*, is abundant in thickets on rocky limestone soils, especially on the south side of the river, opposite Montreal. The fruit is very variable in size, color and quality. It usually ripens from about the middle of August to the end of the month, and is often collected for domestic use. Growing in the

thickets the plants rarely become very large, and they often spread and increase by suckers. The true *P. Americana*, as now distinguished and separated, does not occur in this region. *P. Pennsylvanica*, the Bird or Pin Cherry, is common. *P. serotina*, the wild Black Cherry or Rum Cherry, becomes a large timber-tree, but the best of it has been cut from the woods. *P. Virginiana*, the Choke Cherry, while commonly seen as a shrub, is sometimes found with single stems twenty or more feet high and ten inches through. A variation, with large, clear amber-colored fruit, is sometimes found in or near French-Canadian gardens, and is usually more or less arborescent. The ripe fruit of this and of the black type is to be found in the city markets of Montreal. When fully matured it has sometimes a very pleasant flavor.

Arnold Arboretum.

J. G. Jack.

Planting the Locust.

CONSIDERING the effort of thought and manual labor, perhaps nothing that I have done at the Agricultural College during the past twenty-four years is likely to be productive of more satisfaction or lasting benefit than the planting and care of trees on a small area of less than two acres. The planting was begun in the fall of 1876, and was continued for several years afterward. The land is a rather thin sandy loam. The trees were mostly planted in rows four feet apart, each kind usually by itself in whole rows, or in parts of several contiguous rows. The mistakes made are now probably as instructive as anything. For a greater or less time—five to ten years—the trees were cultivated. Including species represented by one to five trees and some shrubs, there are not far from one hundred and fifty kinds. Elsewhere, after five years of experimenting with various crops on the Jack-Pine plains, two members of the State Board of Agriculture told me that the most valuable part of the work done was the acre of land on which I had planted some sixty-five species of trees, some of which are doing well.

In the spring of 1880, in the college arboretum, I planted a few sprouts of common Locust, *Robinia Pseudacacia*, one year old, in the midst of Chestnuts, Ashes, Maples and Butternuts that were several years old. Some years ago the best tree was cut for an exhibition, but I have just measured another. It is now about forty feet high, the advanced growth of surrounding trees having kept off the lower limbs and caused it to shoot up with a long straight stem. Three feet above the ground the circumference is thirty-one inches, and eighteen feet above the ground twenty-four and a half inches. The trunk is clean and nearly free from borers, a result, I believe, of the shading by surrounding trees; perhaps, also, partially due to the small number of the Locusts in this isolated spot. Another tree is nearly as large, and both would make nice fence-posts or telegraph-poles. Sprouts have come up for some distance around in every direction. This suggests forcibly the propriety of planting sprouts or seeds of the Locust, a few here and there, in open places among young timber, where the soil is suitable for their growth.

Agricultural College, Michigan.

W. J. Beal.

New or Little-known Plants.

Syringa Pekinensis.

ON page 165 of the third volume of this journal the portrait of a flowering branch of this north China tree was published. It had produced a few clusters of flowers for the first time in America in the spring of 1889 in the Arnold Arboretum, where it had been raised from seed sent by Dr. Bretschneider from St. Petersburg. The plants attained such a large size without flowering at all, and appeared to be such shy bloomers when they did flower, that we believed it was the least valuable of all the Lilacs as a flowering plant, in spite of its hardiness, rapid growth and excellent habit. Like many other plants, however,

Syringa Pekinensis does not show what it is capable of in the early years of its life, and does not begin to flower freely until it has grown to a good size, but that it can in time produce its large clusters of white flowers in profusion is shown on page 385 of this issue, which is reproduced from a photograph of a plant which stands in deep rich soil, in a garden near Boston, and has been allowed to spread its long graceful branches in all directions. The habit of *Syringa Pekinensis* is excellent, as the illustration shows; the foliage is pleasing in color, and is not injured by insects or disease; and the flower-clusters, which appear a week or ten days earlier than those of *Syringa Japonica*, and about ten days later than those of *Syringa Amurensis*, are produced more freely on old well-established plants than they are on either of these species. They appear, too, on the lower as well as on the upper branches, while on *Syringa Japonica* they are usually confined to the upper part of the tree. The disagreeable Privet-like odor, which is common to all the Lilacs of this section (*Ligustrina*), is less pronounced in this species than in the others. Altogether, *Syringa Pekinensis* in New England is a very beautiful, desirable and perfectly hardy small tree. It requires, however, strong moist soil and plenty of room in which to display the graceful sweep of its branches.

Plant Notes.

VIBURNUM CASSINOIDES—This handsome shrub, which has its home in the swamps of our northern states, succeeds well in any ordinary garden-soil, and, like other members of the genus, deserves a larger place in our parks and gardens than it has yet received. Just now its clusters of berries, some of them bright pink, some flesh-colored, contrasting in color among themselves and with the dark green leathery leaves, give the plant a singular attractiveness. Later on the berries will be dark green and the foliage will assume rich autumn colors. In June it bears abundantly broad cymes of cream-white flowers, while its vigorous health and its compact habit make it serviceable at all seasons. *V. nudum* is a closely allied plant of more southern range, and like *V. cassinoides*, when taken from its native swamps into good garden-soil, it abandons its spindling habit and spreads out into a broad mass of lustrous foliage that makes it worth planting, even in choice collections of shrubbery.

STERNBERGIA LUTEA.—This is by no means a new plant, but, although the bulbs are not expensive, it is much more rare in gardens than it deserves to be. It is one of those bulbous plants which rest during the summer and throw up flower-spikes in September, and, like the autumn *Crocus* and *Colchicum*, it always affords a pleasing surprise by its unexpectedness. Its flowers are often called *Crocus*-like, which is only partially true. They are a beautiful clear yellow, two inches or more long and funnel-shaped, but they are borne on scapes from four to six inches long, and as they usually stand out at an angle from the stem, the general effect is altogether different from that of a short-stemmed *Crocus*, and the common name, Winter Daffodil, by which they are known in England, is much more appropriate. Unlike the autumn *Crocus*, the attractive foliage appears with the flowers and remains all winter. The leaves are from six to twelve inches long, narrow, slightly keeled and very dark green, and they add much to the appearance of the plant. A colony of *Sternbergias* on a front border makes a beautiful mass, since the flowers last for a long time and are very useful for cutting. As we have said, the leaves appear with the flowers and ripen off in the spring. They seem perfectly hardy here, however, but some cultivators hold that the plants are stronger if they are covered with a sash in winter to prevent them from being crushed by the snows. In Europe they are often grown on the borders of water or in bogs, but here they flourish well in any well-drained garden-soil and increase rapidly. There is a stronger variety with larger



Fig. 62.—*Syringa Pekinensis*, in a Massachusetts garden.—See page 384.

flowers, known as *Sicula*, which locates the home of this plant as the island of Sicily, but it is probably of this variety that Mr. Whitall writes that the flowers are sometimes five inches in diameter. There is also a very narrow-leaved variety, *Græca*, with flowers intermediate in size between the two named above. *Sternbergia lutea* is said to be the "Lily of the Field" referred to in the New Testament Scriptures.

CYPRIPEDIUM CHARLESWORTHII.—The discovery of this plant about a year ago was a sensation among Orchid growers, and two flowers of it exhibited at a meeting of the Royal Horticultural Society last September sufficed to command for it a first-class certificate. The novelty of a *Cypripedium* with a dorsal sepal which was rose-colored made it very interesting to hybridizers who had been long looking for such a feature. The fact, also, that it blooms in late summer and early autumn and its close alliance with the popular *C. Spicerianum* gave it an additional value. By good fortune enormous importations have been made, so that, although it is such a new plant, it has already flowered abundantly both in England and in America. The variability of color in the dorsal sepal which the plant presents is noted in the current number of the *Orchid Review*. Not only does the rose-color fade in some instances until it becomes almost a pale lilac, but the marbling varies considerably, so that it is occasionally almost absent, while in other flowers the white predominates. The same variation appears in the flowers which have been produced in this country, where the dorsal sepal is sometimes almost identical in color with the rose-purple of the lip of our native *C. acaule*. It seems to grow more freely than *C. Spicerianum*, and its remarkable staminoide, with its new departure in color, has already set the hybridists at work, and some striking variations in form and color are confidently anticipated. It seems strange that a plant of such striking characteristics should have remained so long undiscovered.

Cultural Department.

Oncocyclus Irises.

I HAVE read much about these beautiful plants in GARDEN AND FOREST, and have been thoroughly interested in Mr. Gerard's frequent accounts of them. These notes have induced me to plant this class of Irises in a small way myself, so that I have accumulated a little experience of my own. In the hope of inducing others to make a trial of these and other Irises too little known in our gardens, I feel impelled to set before your readers the experience of the Rev. Henry Ewbank, as recorded in a recent number of *The Garden* (London), and adapt this somewhat to American conditions. Every one who knows these plants will agree that they are among the brightest ornaments of the hardy garden. Mr. Ewbank considers *Iris Lorteti* as the most beautiful of flowers, and while this judgment may not be generally concurred in, few people who have seen a specimen of this plant in bloom or of *I. Korolkowi*, *I. Gatesi*, *I. paradoxa*, *I. Iberica*, or even of the better-known *I. Susiana*, will deny that they take high rank among flowers both for beauty of form and of color.

Many persons who have tried to grow these plants have not been perfectly successful, but our knowledge of their wants and habits has been growing, so that we can now venture to give general rules for their treatment, and with a little experience any one can plant them with a fair assurance of success. Mr. Ewbank's plan of cultivation rests upon two principles, which are perfectly reasonable when the climate of their native country and their manner of growing are considered. In the first place, in imitation of the climate of central Asia, Persia and northern Syria, arrangements must be made for drying off the plants perfectly in summer. Very little moisture is enough to keep their roots excited after they should be soundly ripened and at rest—and this means certain decay and death. To prevent this it has been the practice to lift the roots and dry them off, replanting them in late August or September, when they will send up leaves which remain green all winter. Many failures occurred when this plan was followed because the species has been developed in hard dry soil, where they are left under the full rays of the sun to bake in the ground, and they, therefore, resent any root-disturbance, which is the

second point to be constantly borne in mind. The problem, then, is how to dry them off without removal.

Mr. Ewbank observed *Iris Susiana* growing very well on a raised platform, and this suggested a new idea. He, therefore, placed the Irises in a platform-bed raised above the ground-level, with paving-stones below, which allowed the moisture to drain off the roots in winter, but which cut it off from below, and so prevented it from rising in the summer-time. He put sashes over them in early June in the expectation that they would soon dry off, but they still continued to grow. The truth was that the upper six inches of soil in the bed acted as a mulch to the lower six inches, and kept them moist, so that all his calculations were defeated. Since the roots were not to be disturbed, he could not lift the plants, but he carefully removed the top soil from among them, and left the roots on little mounds in the bed, so that the sun could shine all about them and evaporate all the water from the lower stratum of soil. After this treatment a few dried stalks and leaves were the only visible reminders that the plants had ever been in bloom, and every one dried off in safety. He left them to parch until the middle of September, when they seemed anxious to start, and replacing the soil back on the beds, he removed the sashes so that the plants could receive the rain. All of them did very well during the winter, although the foliage, of course, was more or less injured by storms, and they flowered abundantly the next spring.

In our dry hot summers it will not be required to remove the earth from among the plants in a bed of Irises. Indeed, I have seen them growing on the south side of a house-wall, and in a bed not raised above the general ground-surface. Here they flowered well, and a sash placed over them after the blooming season and kept over them during the summer-time gave them the drought and heat needed for ripening and rest. Of course, they were covered early and the ground became perfectly dry about them. This is the critical point, for they are hardy against our winter cold and need no covering at that season.

Where a house-wall at the north does not insure absolute dryness for the bed in summer this must be secured in some other way. The bed may be made over a layer of broken stone, or, at all events, it must be so constructed that the drainage will be always perfect, so as to exclude entirely the moisture which would naturally rise from below during the warm season. With the earth perfectly dry our July and August suns can be trusted to give the plants all the roasting and resting they require. The points to be observed are that the sash shall be put over them early enough, and that the soil shall be kept absolutely free from moisture. There is no danger from the heat of summer or the cold of winter. We need additional experience as to soils—some varieties appearing to do well in one kind and others in another. But it is safe to begin experiments in good garden-soil, where, if they are not planted too deeply, and are cared for as above suggested, these Irises will well reward any one who gives them this special treatment, for their flowers possess an ethereal beauty and a delicacy and refinement in their rich and yet subdued colors which few of their rivals in the floral kingdom can show.

Staten Island.

T. B. Ellis.

Narcissus poeticus and its Hybrids.

NEARLY all the cross-bred *Narcissi* of value for outdoor planting are the offspring of Trumpet Daffodils, yellow, white or bicolor, and *N. poeticus*, or the Pheasant-eye *Narcissus*. Indeed, the only notable exception is *N. odorus*, the sweet and useful Campanelle Jonquil, which has originated between yellow forms of the Trumpet Daffodil and *N. jonquilla*. It is curious, by the way, that Mr. Barr, our most experienced authority upon the *Narcissi*, should, in his catalogue, except *N. odorus* from hybrids and call it a species. Nothing is more certain than that *N. odorus* is derived from this cross. To the former comprehensive cross must be assigned all the flowers, now so largely grown, which are grouped under the designations *incomparabilis*, *Barri*, *Leedsii*, *Humei*, *Nelsoni*, *Backhousei*, *montanus*. I have ascertained by experiments, beyond any doubt, that the many varieties of Trumpet Daffodil with *N. poeticus* will produce all the forms which we grow under these names, but that *N. Burbidgei* is a secondary hybrid, the result of crossing *N. incomparabilis* again with *N. poeticus*. The difference between *N. Burbidgei* and these other classes is quite sharp and distinct, three of the anthers in *N. Burbidgei* being raised well above the others, or, in more scientific terms, being biserial visibly at a glance. I find this character to be quite unfailing as a mark of division. The present classification of these hybrids of *N.*

poeticus serves very well, with one or two exceptions. No separation need be made between the sections incomparabilis and Barri, for both commonly arise from the same cross and the very same pod of seed. And *N. montanus* should certainly be included under *N. Leedsi*, for it comes, as they do, from the intercrossing of white Trumpet kinds and *N. poeticus*. *N. Leedsi*, var. *Gem*, is merely a larger form of *N. montanus*, and I have raised flowers from this cross which practically reproduce them both.

The great value, from the point of view of our gardens, of these hybrids is their great vigor, which they owe to *Narcissus poeticus*. It commonly happens among my own seedlings that a delicate Trumpet Daffodil, difficult to increase or even keep in health in my garden, will produce a vigorous form of incomparabilis, strong and prolific. The beautiful *Leedsi* Daffodils are a striking example of this infusion of the stronger blood into the weaker. The white Trumpets—*N. cernuus*, *albicans*, etc.—are notoriously fastidious about soil and other conditions. In my own garden, for instance, they will scarcely keep alive. But most of their progeny by intermarriage with *N. poeticus*, notably such flowers as *Leedsi* type, *Duchess of Brabant*, *Amabilis* and others, flourish here and everywhere like weeds.

To *Narcissus poeticus* we also owe the beautiful orange, and sometimes almost scarlet coloring, which its hybrids exhibit in the edge of, or occasionally suffused throughout, their crowns. To what extent this coloring matter will be transmitted is always most uncertain. The very same pod of hybridized seed will yield flowers with deep red cups or crowns, and flowers without a trace of such color. A remarkable instance of this uncertainty came under my own observation. One of my finest and most brilliantly colored seedlings is *Albatross*, which came from the well-known *poeticus ornatus*, by pollen of *Empress*, the great bicolor Trumpet. The hybrid remains almost a pure *poeticus* in plant and bloom, save a great increase in size, the flower sometimes measuring five inches across, and a somewhat enlarged crown, which has a sharply defined ribbon-edge of intensely bright orange-scarlet. But from the same pod came another flower, *Seagull*, almost the counterpart of *Albatross*, except that the ribbon-edge is deep yellow and not red.

The most vividly colored of all hybrid *Narcissi* known to me is *Lulworth*. It is not large, nor is the perianth so shapely and firm as in some varieties. But the cup is of deep chrome-yellow, broadly edged and suffused with glowing red, and the flower has a luminous "red-hot" quality which makes it quench all other red-cupped kinds set side by side with it. I am acquainted with several other *Narcissi* which, looked at separately, appear to have more red in them than *Lulworth*, but the latter quite "snuffs them out" when they are brought together.

Narcissus poeticus itself is capable of much improvement, and it has always appeared to me strange that the earlier workers at raising seedling *Narcissi* have made no attempt in this direction. To enlarge the flower and deepen the crimson of the eye should be the aim. For many years I have raised a very large number of seedlings between *N. poeticus ornatus*, which has been the existing standard of form, by reason of its circular flower with broad overlapping petals, and *N. poeticus poetarum*, which has a deep crimson eye, but flimsier petals and a worse constitution than *ornatus*. Thus I have obtained some very fine flowers of increased size and substance, round in shape, and having the eye colored deeply to its base. Such a flower is *Horace*, large, very broad-petaled, and with a richly colored eye. It gained the medal for the best new *Narcissus* shown at the Royal Horticultural Society meetings during the present year. I am hopeful of a further improvement in size and color of this lovely *Narcissus*.—G. H. ENGLEHEART, in *The London Garden*.

The Water-garden.

IN my scheme of gardening many of the favorite plants of one season are apt, for one reason or another, to disappear the next, especially if they are plants which flower after the early summer. The *Nymphæas*, however, one and all, have a charm of which one never wearies, and the water-garden is the one feature of my little pleasure which could not be spared. In this very dry season it has been a joy and comfort at all times, and, singularly enough, insect enemies were never fewer, and though there was no general replanting of varieties, flowers have been very plentiful.

Water-lilies are universal favorites, and no flowers are more beautiful in their setting of lush green leaves, especially if these are surrounded by ample spaces of limpid water, with,

perhaps, a foil of Grasses, Sedges, Irises and other plants to complete the picture. As it has been often said, this is a picture possible to make in any sunny garden, and one sure to interest and please every one. This is a statement which, in my experience, could not be made about any other family of plants. My garden friends have very diverse tastes, and I learned long since to expect appreciation only in spots, as it were, for my passing fads, but the water-garden is unanimously approved. By this I do not mean my special garden, but the water-gardens in general, which are now becoming more numerous. There seems to be a hesitancy, I find, to undertake the cultivation of Water-lilies, and a desire to know the sunny side of such a garden; to be informed as to its drawbacks; to know the exigencies and enemies the plants are subject to, and the difficulties of their cultivation.

First, as to its healthfulness: A tank or pond supplied with vegetation and animals, in the way of fish and frogs, should prove a real aquarium where conditions of life are so balanced that animals and plants shall be healthy and the water remain limpid. All this can be realized in a pond if it is kept clear of vigorous weeds and does not receive foul surface-drainage. In artificial tanks or ponds bad weeds are not likely to become established, and one has only to fight the minute *Algæ* which so quickly form masses and choke up the pores of larger plants. These *Algæ* do not appear every year. This season none have troubled me. In my tanks, which are suitable in size for a small garden, the water will sometimes become foul in winter from being kept too closely covered in moderate weather, and in March the water is siphoned off as soon as the coverings are removed. If planting is done, the manure used will stain the water for a while, but this soon disappears. My tanks are supplied with sewer connections and a hose is convenient, but, as a rule, this is only used to make up evaporation or to clear the water from floating particles which will sometimes gather. During a spell of abnormally hot weather fresh water is supplied liberally every day, using the hose every half-hour, and aerating the tank water by elevating the nozzle of the hose above the surface. This care may not always be necessary, but it is prudent with a small tank. Aphides are fond of aquatic plants, and in getting rid of these pests nothing is so simple and serviceable as a dusting of tobacco-powder. This is allowed to remain a day or two, and then washed off. Various other forms of insect-life are found on or among the plants, but these are usually not harmful, and they are accidental, rather than annual, visitors. The fish and frogs will take care of many of them. Nature here supplies another destroying element, the house cat having an unbounded appetite for my special breed of light green frogs, and giving about the only anxiety connected with the tanks.

To make a water-garden complete one should, have an artificial bog, which in this connection could be easily supplied with moisture. One can scarcely imagine an addition to a garden which would be more interesting, and in which one could cultivate more beautiful plants.

Elizabeth, N. J.

J. N. Gerard.

For the Perennial Garden.

I FIND nothing more satisfactory in a sunny border than the perennial Scarlet Phlox, which flowers from July until frost, and forms a superb mass of glowing color against a background of shrubs that have finished flowering. These flaming masses, here and there broken into by the large blossoms of the white variety, or alternating with them, are brilliantly effective. This Phlox requires little care and succeeds with moderate watering. If the terminal bunches are removed as they cease to flower the laterals will continue to bloom until very late in the season. Tall Larkspurs, cut down after their first flowers are past, reappear in autumn with shorter spikes of blue, which combine well with other colors, notably with the sunny disks of the perennial Sunflower, which is as good for cutting as it is ornamental in the border. I have likewise a partiality for the old-fashioned Bee Balm. Its masses of rich cardinal-colored flowers continue for two months or more if the flowers are kept cut when their rays fall. Here the June blossoms, both of shrubbery and border, are so mangled by the Rose-chaffer that we do not try to care for their defaced and blackened forms, but all gay flowers that come after the tenth of July are gladly welcomed, the Balm among them.

Hingham, Mass.

Mary C. Robbins.

The *Reine Claude* Plum.—Those who are planting Plums should not overlook the *Reine Claude*, or *Bavay Green Gage*, as it is also known. This plum is peculiar in many respects. It is much larger than the common *Green Gage*, but otherwise

resembles it. The flavor is rich; the time of ripening is the very last of September. The plums do not tend to rot and are free from curculio stings. After ripening they hang on the tree a long while without rot or loss of quality or drying up. The tree is stocky, a good grower and good cropper. On the whole, for a really first-rate plum, I know hardly one to surpass the Reine Claude.

Clinton, N. Y.

E. P. P.

Dendrobium Phalaenopsis Schröderianum.—As the flowering season of this species comes around, one is more convinced than ever that it is among the very best, not only of Dendrobiums, but of all tropical Orchids. As one plant after another comes into bloom they show a remarkable range of color, varying through pale lilac and rose up to crimson and purple. The plants, too, are very floriferous, and the flowers endure for a long time. Imported plants become established quickly when properly taken care of, and they seem to increase in beauty every year. They should be suspended in the stove near the roof, when they will grow vigorously and show that the admiration which they have universally excited is well deserved.

Wellesley, Mass.

Frank Gould.

Correspondence.

Winter Pears.

To the Editor of GARDEN AND FOREST:

Sir,—In reference to winter pears, may I inquire if it is safe to set the trees out in autumn? Would Anjou, Winter Nelis, Lawrence and Josephine de Malines be a good list?

New Brunswick, N. J.

R. A.

[Pear-trees can be safely set out in autumn if they are set early and firmly and well mulched. A good list for almost any section east of the Mississippi, where Pears grow, would be Anjou, Winter Nelis, Josephine de Malines and Patrick Barry. It is always advisable, when planting for home use, to experiment to some extent. A stocky Pear-tree, five or six feet high and suitable for planting, is not expensive, and an outlay which allows a test of several varieties need not be large. Every one will then settle on a few favorites, and the others can be grafted out if desirable. Winter pears should be picked as late as possible, handled with special care and stored in a dry dark room until just before they are wanted for use.—E. P. P.]

The Water Chinquapin.

To the Editor of GARDEN AND FOREST:

Sir,—I was interested in the note which appeared in your issue for August 22d, on your beautiful yellow-flowered Nelumbium. This plant has never become established in English collections, while Nelumbium speciosum is grown with great ease. Is it harder than N. speciosum? If some of your skillful growers would tell us how to manage it we shall be greatly obliged.

By the way, you speak of it as Nelumbo lutea. Is this a printer's error, or is it a new rendering of what we have been in the habit of calling Nelumbium luteum?

Kew.

W. W.

[Nelumbo lutea is the name of this plant as it appears in the sixth edition of Gray's *Manual*. This vernacular name, taken directly from the Ceylonese, was used by Adanson in 1763 and by Gærtner in 1788. Undoubtedly, it has been adopted in the *Manual* because of its priority to the Latinized name Nelumbium, which was not used until 1799. It may be, that our Yellow Nelumbo is somewhat hardier than the Indian species, and yet they are both practically hardy in this latitude, N. speciosa having been naturalized in Central Park and other places near New York. The tubers of neither of the plants will live when frozen, but in shallow water and in soil which is not too hard the roots of both will grow downward so as to be out of reach of the ordinary winter frosts. Some people complain here that large roots of Nelumbo lutea sometimes fail to start, but Mr. Tricker finds that it will grow just as easily as N. speciosa, either from the roots or from seed, although both are occasionally uncertain. He treats both plants in the same way; that is, he starts the seed

indoors in April in a temperature of from seventy to seventy-five degrees, Fahrenheit, and it will germinate in a week. If the seedlings are kept moving they will be in nine-inch pots by the middle of May, and early in June he plants them out where they will remain. They will not bloom the first year, but there will be abundant flowers the next season if they are not molested. Seed may also be planted out where the plants are intended to grow in June. The hard shell of the seeds should be filed through. If grown from tubers, small ones may be put out in April and grown along indoors until June, when the conditions will be favorable for rapid growth, or, at least, such that the plants will not stand still. No care has been taken in selecting choice plants of our native Nelumbo, but the flowers vary considerably, some of them being as clear and deep in color as Marliac's *Nymphæa chromatella*. Altogether, this seems to be a promising aquatic plant for experiments in hybridizing.—Ed.]

The Dahlia Stalk-borer.

To the Editor of GARDEN AND FOREST:

Sir,—You inquire in your issue for September 5th regarding the larva of the Noctulid moth, *Gortyna nitela*, preying upon Dahlias. I have noticed it here for three or four years past. It does not generally, with us, destroy the plants directly if not removed, but weakens the stems, so that they are easily broken by the wind or rain, or fall over of their own weight. By tying the plants to stakes passable blooms may be obtained, impaired, however, by the lessened vitality of the plant. But a little attention in season will generally get rid of the pest. Packard, in his *Guide to the Study of Insects*, quotes from the *Prairie Farmer* the following mode of treatment: "The careful culturist need fear nothing from this troublesome insect, as an occasional close inspection of the plants about the 1st of July will reveal the hole where the borer has entered, which is generally at quite a distance from the ground, and by splitting downward one side of the stalk with a penknife it may be found and killed. If this inspection be made at the proper time the worm will be found but a short distance from the hole, and the split in the stalk will heal by being kept closed with a thread." I have found a similar borer in the stem of the Tomato, and treated it in this way, not using a thread, but pressing the tissues together by the fingers. It is well to tie the stalks to a stake if the injury has gone far, lest they break where weakened. The borers do not always go downward in the Tomato, but a little inspection will reveal the direction.

This *Gortyna* attacks a variety of plants, and is popularly called the stalk-borer. There is another, called by Harris *Gortyna zeæ*, which he states, in his *Insects Injurious to Vegetation*, attacks the Dahlia. This is properly the Corn stalk-borer. Packard gives it as generically different in his Guide. Its habits are somewhat different from those of the Dahlia or Aster stalk-borer, since it undergoes its transformations in the stalk of the Corn, while the stalk-borer which afflicts the Dahlias crawls into the ground to go into the chrysalis stage. Taking Mrs. Seliger's identification to be correct, it would not be the true Corn stalk-borer which injured her plants, but the Dahlia or Aster stalk-borer.

Chicago, Ill.

E. J. Hill.

Keeping Half-hardy Plants over Winter.

To the Editor of GARDEN AND FOREST:

Sir,—Every year's added experience more firmly convinces me that the best way to deal with half-hardy shrubs and plants is to lift them in late autumn, pack the roots well around with moderately moist soil and set them in a rat-proof cellar over winter. I treat Crape Myrtle, Oleanders, Agapanthus, Tritomas, etc., after this manner, and, after ripening them off in some cool but sheltered place, like a wood-shed or back piazza, put them in the cellar and leave them there until spring. Unless the cellar has an unusually dry atmosphere, or the winter proves unusually long, large specimens need no watering at all while at rest in the cellar, and smaller ones no oftener than once in five or six weeks. This leaves the wood and tissues plump and sound, while the plant is all the better for its long rest and is ready to start at once into vigorous growth when brought up in the spring. Plants of doubtful hardiness are almost sure to winter well under this treatment, whereas if left in the ground, even with heavy mulching around them,

the shrubs often kill to the ground, and the bulbs are as often as not rotted in the ground.

A still better way is to grow all this class as tub-plants. They can be ripened off with ease in this manner, and suffer absolutely no check from lifting. But as every one cannot procure the large, heavy flower-tubs that large specimens require, or do not wish to take the added care of so many tub-plants over summer, lifting them, if carefully done, will be found a much safer plan than to leave them in the ground.

Half-hardy vines, such as Passion-flower, *Solanum Jasminoides* and *Manettia Cordifolia*, can usually be wintered in the middle states out-of-doors, if too large to be taken up easily. To begin with, they should always be planted in some sheltered spot where house-wall, piazza or bay-window will cut off cold winds. After the leaves fall coil the vines to the ground and cover with a deep and wide layer of mulching of some kind.

Pineville, Mo.

Lora S. La Mance.

Elm Trees in Central Park.

To the Editor of GARDEN AND FOREST:

Sir,—In passing the lower end of the Mall in Central Park recently I noticed that the Elms bordering that walk were almost entirely without foliage. I could not determine by a hasty glance from the driveway whether this was due to the drought or the beetle. If to the latter, will you not add to the suggestions in your editorial in the last issue on irrigation one urging the benefits of spraying the Elms of the city parks? Our college Elms received the two necessary douches last spring, and, in spite of thin soil and long drought, are now green, while their neighbors are brown or bare.

Rutgers College.

Austin Scott.

Recent Publications.

The Trees of Nebraska.

Third Report on the Native Trees and Shrubs of Nebraska. By Charles E. Bessey. Extracted from the Annual Report of the Nebraska State Board of Agriculture, 1894. Pp. 98-127.

Professor Bessey, of the University of Nebraska, and his assistants are studying the forest-flora of that state in the most thorough and comprehensive manner, and are gradually mapping the distribution of the different ligneous species which occur within the borders of the state in the most accurate manner. Professor Bessey's Catalogue of Nebraska Trees was first published as Bulletin No. 18 of the Agricultural Experiment Station under the title of "A Preliminary Report of the Native Trees and Shrubs of Nebraska." This list was corrected and enlarged, and was again printed in the Annual Report of the Nebraska State Board of Agriculture for 1892. The present publication, which the author tells us is not published "as a complete or final report, but as a contribution to our knowledge of the native woody plants of the state," embodies the information gathered in connection with a collection of specimens of Nebraska trees exhibited last year at Chicago and of various explorations made in the western and north-western counties.

The catalogue, as here published, contains sixty-four trees and seventy-seven shrubs—a large number when it is considered that Nebraska is one of the so-called treeless states, but accounted for by the facts that the eastern border is well wooded with eastern species, while several species of the Pacific silva, descending from the Rocky Mountains, find their most eastern home in the northern and western parts of the state.

Professor Bessey finds, in studying the distribution of the ligneous species of the state, especially with reference to the altitude above the sea-level of the regions they inhabit, that:

Nearly all have probably migrated to the plains from the east. They have, in some cases, done no more than to get a little foothold in the extreme south-eastern counties, to which they have come from the heavy forests of Missouri. A few have doubtless crossed the Missouri River from western Iowa, although this number is evidently very small. Nearly all our trees have come up from the Missouri bottoms and

spread from the south-eastern corner of the state west and north-west. Possibly a few may have come up the Blue River from Kansas, but these must eventually be traced to the Missouri River bottoms at the mouth of the Kansas River.

The trees and shrubs which are found only in the western part of the state unquestionably came from the Rocky Mountains, and have spread eastward to their present limits. Only one of these, the Buffalo-berry, has spread itself over the whole state. There is a probability that a further examination of the bluffs of the Niobrara, Platte and Republican rivers will show several more of these Rocky Mountain plants which have come down with the river currents. It is singular that so few of the western trees and shrubs have come down the streams, especially as prevailing winds are also from the westerly parts toward the east. One certainly would have supposed it much easier for the western trees to come down stream, and with the wind, than for the Elms, Ashes, Plums, etc., to have gone up the streams against the prevailing winds. I suspect that the meaning of all this is that eastern conditions are slowly advancing westward; that such climatic and other changes are slowly taking place upon the plains as favor the eastern rather than the western trees.

The Nebraska silva is of special interest; in no other part of the country are members of the Atlantic and Pacific forests so mingled together as in some of the northern and north-western parts of the state; and certainly in no other part of the country do trees so unlike in geographical range as the Black Walnut and the Yellow Pine of the Pacific forest (*Pinus ponderosa*) grow side by side in the same grove.

Professor Bessey's report is a model which we hope to see the botanists connected with the other agricultural colleges adopt, for a complete knowledge of our forest-vegetation and the distribution of our forest-species can only be obtained by recording year by year, as they are made, the notes of trained field observers.

Two years ago Professor Bailey published an account of some of our native Bush Cherries, which have been recommended for fruit. Since then he has made a wider study of the matter from plants which he has been testing on the University grounds at Ithaca, and in Bulletin No. 70 of the Cornell Experiment Station he gives the result of his latest studies. Three species of native dwarf Cherries are spoken of, the first being the Sand Cherry, *Prunus pumila*, the second the western dwarf Cherry, *P. Besseyi*, and the third the Utah hybrid Cherry, which seems to be a hybrid between *P. Besseyi* and the Sand Plum, *P. Watsoni*. The Sand Cherry is a variable plant common along the Great Lakes, strictly erect when young, but with reclined trunk as the plant becomes older. The fruit is about half an inch in diameter, black, variable in quality, but giving evidence that it may be improved so that it can be used as a fruit-plant, especially in poor or arid regions, where few other fruit crops can be grown with profit. The second species, which Professor Bailey has named *Prunus Besseyi*, is already in cultivation. The plant is dwarfer, more compact, and has denser and better foliage than the Sand Cherry. The fruits are variable in shape, often as large as those of an Early Richmond Cherry, and very palatable. It is a plant of great promise, and from the fact that it flourishes over a large area of our interior plains, it will probably adapt itself to sandy barrens and other trying soils and situations. The Utah hybrid is hardy and productive; the cherries are very handsome, being of a deep mahogany color, with a light plum-like bloom, and they ripen about the 1st of August at Ithaca. The flesh is soft and juicy, but it lacks body, and the skin is bitter. Altogether, the quality of this fruit may be pronounced as poor. The plant is a tree-like bush three or four feet high, hardy, productive, and, although it is of no immediate value, it indicates that there may be combinations of dwarf Plums and Cherries which shall have distinct horticultural merit for certain trying situations. In his earlier bulletin Professor Bailey stated that weeping and variegated leaved forms of our common Sand Cherry had been cultivated for ornament. He corrects this by stating that these plants so named by nurserymen are dwarf forms of the Cherry of Europe and northern Asia, *P. chamæcerasus*. The Cherry sold by nurserymen as *P. Japonica pendula* is the same European species. The bulletin is well illustrated with reproductions of photographs of the three species in fruit and of branches which have been attacked by different fungous diseases.

Notes.

An English Daffodil grower announces that he has decided to accept twelve guineas, something more than sixty dollars, for a bulb of one of his new hybrid Narcissi.

Vinca rosea, the Madagascar Periwinkle, has been again proving this year that it is one of the best of bedding-plants for dry weather. By the middle of July the plants attain such a size as to completely shade the ground if they are set out originally about a foot apart, and the flowers nestling among the glossy leaves make a most attractive appearance. The variety with white flowers and the one with white flowers and a scarlet eye are preferable to the type, which has rather dull rose-colored petals.

The last number of the London *Garden* which comes to hand contains a colored plate of the double-flowered *Datura Cornucopæa*, which Messrs. Pitcher & Manda introduced a few years ago. The delicate purple of the large trumpet-shaped flower and its shining dark brown stems are very well reproduced. It is a robust plant, and bears flowers eight or ten inches in length and five or six inches across the limb. These are produced in great abundance, a single plant often yielding two hundred or more during the season.

Professor B. T. Galloway read a paper before the American Association for the Advancement of Science, at its late meeting in Brooklyn, on the "Growth of Radishes as Affected by the Size and Weight of the Seeds." After a discussion of the physiological questions involved, some experiments were reported, the results of which were, in brief, that when large seed was sown ninety per cent. of the crop reached marketable size at the same time—that is, the plants matured in from thirty-five to forty days, while from seed as it usually comes from the market—that is, large and small mixed together—about fifty per cent. of the crop matured in the same time.

Rev. G. H. Englehart, who is well known as an expert in the cultivation of Narcissi, states that the hybrids and cross-bred plants of this genus are rarely sterile. After many years of crossing and the production of a great many new hybrids, he finds that almost every one can be made to yield good seed, although it is necessary in some cases to fertilize the flower artificially. The variety *Empress*, for example, rarely seeds when left to itself, but when fertilized by hand it is fruitful. *Narcissus poeticus verus*, too, which is hardly ever fruitful under natural conditions, will almost invariably bear seed if touched with the pollen of the varieties *ornatus* or *Poetarum*.

Near the markets and stores of the wholesale fruit-dealers in this city a very considerable trade in branches of our common Wild Black Cherry, *Prunus serotina*, is carried on in the early morning. The new growth from vigorous young trees, well furnished with fresh green and glossy leaves, is cut to a length of about two feet and a half, and the twigs are tied up in bunches of a dozen. Large masses of these bundles are piled up on the sidewalk or are placed upright in tubs, and sold to retail fruit-venders, who use them to decorate their stands and push-carts. The branches usually come from Long Island or New Jersey, and sell for two or three cents a bunch.

Mr. Carman has received some of our native persimmons from Decatur County, Indiana, which were picked before there was any sign of frost, and yet he pronounces them entirely free from anything like the astringent or puckery quality generally supposed to be characteristic of this fruit until it has been chilled out by a good freezing. These persimmons were pronounced superior in flavor to any of the Japanese kinds; they averaged in size about an inch and a quarter in diameter and were almost seedless. They were richer than many of the popular varieties of plums, and if Mr. Carman had any objection to their quality, it was that they were too sweet. There can be no doubt that by selection, and, perhaps, by hybridizing with the foreign varieties, our native persimmon could be developed and improved into one of the most luscious of fruits.

The last New York Legislature passed a law appropriating \$8,000, to be expended at Cornell University for the benefit of the fruit-growers in western New York. The law was enacted such a short time ago that no experiments which required much time or care could be undertaken and conducted the present season. But Professor Bailey has prepared a bulletin, entitled "Hints on the Planting of Orchards," which gives directions about the preparation of the land, the manner in which the trees should be set and trimmed and the best place for purchasing young trees. Of course, no attempt is made to

introduce new methods into the orchard practice of the state, but this little pamphlet of fourteen pages gives such instructions as a beginner needs. It is altogether a useful little treatise, clearly and concisely setting forth the reasons for the practice recommended, and it is illustrated in such a way so as to help to an understanding of the text. Although it has been prepared to furnish elementary instruction, fruit-growers who are no longer novices will find in this bulletin so many helpful reminders and suggestions that they will feel amply repaid for reading it.

Two or three plants of *Gordonia Altamaha* are now in flower in the Arnold Arboretum. The plants are only about three feet high and are from cuttings taken in July, 1891. They have stood out two winters without protection and nothing but the new growth was killed. Of course, the *Franklinia*, a native of Georgia, is not hardy as far north as Boston, but plants of considerable size have been kept here several years when pegged down in the autumn and covered with sod. In Philadelphia and southward they need no protection after they are once established, and we have often spoken of the singular beauty of their large white incurved petals, which assume something of a cup-shape and enclose clusters of bright yellow stamens with light straw-colored anthers. They are especially attractive at this season, when large flowers are not common in the shrubbery, and their attractiveness is increased by their background of dark green lustrous leaves.

A correspondent of the *Country Gentleman* writes that he has found a moderate amount of shade beneficial to Red Raspberries. As a rule, no plants grow strongly or produce abundantly when standing near trees which rob the soil of its nutriment, but, somehow, Raspberries under the shade of trees seem to grow larger canes and yield more and larger berries. To make sure that his observation was correct, the grower who made this report counted the berries on eight hills which grew in the open sunlight and eight others which had grown together in the shade. The result was that the plants in the shade bore about fifty per cent. more berries, while the size of these berries averaged a third larger than that of those in the sun. The eight hills in the shade averaged four hundred berries each for eight pickings, and two hundred of these berries filled a quart measure. Taking the season through, the shaded stools yielded from four to five quarts each, while in the whole field, including both strong and weak plants, the average yield was about three quarts.

The *Agricultural Gazette*, of New South Wales, contains an interesting report of some experiments in extracting the perfume from flowers. It was found that from *Bouvardia Humboldtii*, which had not up to the present been used for manufacturing purposes, a powerful yet delicate perfume can be extracted, which possesses all the requisite qualities as a body for first-class bouquet. Carnations yield a very powerful and lasting fragrance which proves of great service as an ingredient for perfumes of varied quality, while varieties of perennial *Phlox* yielded a very peculiar, distinct and valuable odor hitherto unknown to perfumers. The experiment showed that the ordinary perfume plants can be cultivated in New South Wales with profit, and that many cultivated flowers which are not worked elsewhere for perfumes develop in that region new and unique odors which ought to command a place in the markets of the world, while the abundant native flora offers many species that might be brought into cultivation with profit for perfumery purposes and give odors of special value.

Amateurs who are now taking up plants and potting them for flowering in the window-garden ought to remember to select small but vigorous specimens and keep them rather backward until strongly established. The better way would, of course, have been to take cuttings earlier in the season; if started as late as this they will hardly make plants strong enough to bloom well until the latter part of winter. The usual practice of lifting large plants which have been doing duty out-of-doors for several months, with the hope that they will continue the same good work all through the winter, is usually doomed to disappointment. On this point the *Rural New Yorker* very truly says: "It is certainly unreasonable to expect plants that have grown and bloomed luxuriantly in our stimulating and almost tropical summer to adapt themselves at once to the changed condition of sitting-room culture during the short gloomy winter days, especially after the violent shock they receive in transplanting. The tyro in floriculture can still secure a stock of winter bloomers by potting up healthy plants which, for some reason, have been prevented from overblooming, taking care to cut back the growth severely in proportion to the shortened roots."

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How to Save the Palisades.

NOT long ago Mr. Olmsted gave public expression to his regret that some irreverent quarrymen were blasting down the Palisades for paving-stones. This remarkable trap ridge, which rises like a perpendicular wall along the Hudson, helps to form a dignified entrance to the miles of noble scenery beyond it, through which the strong and silent river flows to the sea. Ever since the days of Hendrick Hudson it has been the wonder and admiration of all beholders, and it has seemed to be a part of the natural inheritance, not of this city only, but of the country and of the world. It is this frowning cliff, stained with rich color by the storms and sunshine of centuries, from which masses of a thousand tons are daily torn away by dynamite; and the raw surfaces which remain certainly make a painful impression on every one with any eye for beauty or sentiment of veneration. Vandalism is the word which occurs to every one when attempting to describe an act of such destruction, and yet the men who own the rock have bought and paid for it, and they undoubtedly have a right to blast it down and sell it. It may be that they have no feeling for the beauty they are destroying, but, whether they have or not, it is certainly unjust to consider them as willful public enemies. At all events, they are not unique sinners in this direction. Enterprises of the same kind are devastating beautiful scenes and places which are made sacred by historic memories in many other parts of this country. This lack of affection or reverence for spots which have a value for their natural beauty or human association is not confined to America. We read that the waterfall Lodore is for sale, and that Snowdon is in market. The paint-pot of the advertiser is defacing the landscape of Europe, and societies are formed to protect the rare and beautiful plants, which make the Alps interesting, from extermination by tourists. This destruction and defacement have been going on all the world over since civilization began, and if the people at large think that any of their rights are thus infringed upon, they must organize to assert them.

No doubt, it is difficult to draw the line between what belongs to the public and what belongs to the individual. The river is free, but the shores are private property, and every man within certain limits has a right to do with his own what he will, so long as he commits no nuisance. It has been urged, that if the owner of a factory is indictable when its stench offends his neighbor's nostrils, that the quarryman ought to be dealt with by the same rule when he offends the eye and wounds the sentiment of the whole community. We remember a bank of Hemlocks which had been the pride of a town ever since the country was settled, and which had delighted every one who passed by it for two hundred years, and it was cut away simply because a new owner wanted to "clear things up," and the logs were left to rot where they fell. In cases like this the people can only suffer in silence. Of course, no law can be framed to suit every case, and the compromise which it seems necessary for the general public to make with the individual is to acquire in fee simple such places as are most desirable and then to hold them perpetually for public use and enjoyment. This is often done by a special enactment, as the National Government has set apart the Yosemite Valley and Yellowstone Park as public possessions forever, while the state of New York has dedicated Niagara to the same purpose. Under another act a group of private persons have rescued Chittenango Falls, in this state, from destruction and vulgarization. Pennsylvania has taken Valley Forge; New Jersey has secured the fine old colonial house and grounds in Morristown once occupied by Washington as headquarters, and Mount Vernon belongs to the women of the United States.

Up to this time, however, the most hopeful effort in this direction has been organized by Massachusetts, where a body has been legally incorporated "for the purpose of acquiring and opening to the public, under suitable regulations, beautiful and historical places on tracts of land within the commonwealth." We have more than once commended this act and the spirit in which the trustees of the people seem to be carrying it out. The corporation can acquire lands of this sort by gift, devise or purchase, and hold them free of taxes so long as the reservation is open to the public. Local historical and scientific societies, village improvement societies and park boards are co-operating in the movement. In most of the states the owner of some remarkable piece of scenery, like the Natural Bridge, could not even give it to the public, much less sell it, for there would be no one entitled to hold it legally. These trustees exist as a continuous body to receive land for public reservation as gifts, and to receive also donations of money to aid them in making the purchase of such places. If a body like this were created in New Jersey it might own and hold forever the Palisades or the battle-field of Monmouth or any other spot which is hallowed by tradition or inspiring by its beauty.

There can be no two opinions as to whether the Palisades are worth preserving. No citizen of New York can contemplate their destruction without sorrow. They are practically a part of one of the noblest harbors in the world. They have been a delight to the eyes of dwellers on Manhattan Island ever since it was New Amsterdam. They are in sight of the city. Parts of them are nearer its centre of population than some of the newly acquired parkland. They add a distinct element to the charm of the great river which flows into New York harbor, and which is the pride of New York state. They are within the boundaries of another commonwealth, but they face New York, and New York has even a greater interest in preserving them than New Jersey. If New Jersey will pass an act which will permit New York to help acquire them, there can be no doubt that money, either by state or city grant or by private subscription, would come from this side of the river to do its full share toward the rescue of the Palisades and the dedication of them forever to the use and enjoyment of the people.

Forest Fires.

SINCE the sweeping fires in our north-western forests startled the country by the devastation and death which they wrought, we have received numerous letters containing plans for preventing such conflagrations, or for arresting them when they are under way, but in none of them do we find any new suggestions. The clearing away of the top and lop now left by the lumbermen to dry into tinder; spark arresters for the smokestacks of the locomotives; broad lanes kept clear of combustible material, and separating the forest into blocks; watch-towers with officers constantly on the lookout; legislation to make the firing of brush a criminal offence, unless it is done under official supervision—all these subjects and many more have been discussed in these columns and elsewhere times without number. Almost every one insists on the enactment of some law, but few recognize the truth that no printed statute has any efficiency until there is a public opinion behind it to compel its enforcement. This public sentiment is a prime necessity, and the only possible good that can come out of such a terrible calamity as these recent fires is that the death and suffering and loss will arouse the people of Minnesota and neighboring states to think seriously, for not till then can they be trusted to act intelligently and firmly.

A short paper by Mr. H. B. Ayres, which will be found in our issue for May 2d of this year, touches the core of the question. The mass of people are not really vicious and evil-disposed, and do not desire wantonly to inflict injury upon their fellows; and if they are instructed by precept and example as to the terrible results of a forest conflagration, and if they are shown how easily it can be kindled, they will not carelessly play with fire in the woods; and the same public opinion which restrains the ordinary citizen from carelessness will prompt him to see that the law against the deliberate and criminal kindling of forest fires is enforced as surely as those against arson or murder. We do not propose to estimate here the fearful sum total of lives lost and property destroyed, or to speak of those profounder losses which will be felt in the future, when soil burned to barrenness will fail to support its normal forest-growth. No arithmetic can estimate the damage which has been done in the last fifty years, and yet we are far from realizing the whole truth. Before another fifty years passes the country will feel the pinch when timber is scarce and the soil is gullied away from the mountain-sides, and our descendants will find that they must repair, by the expenditure of much thought and labor and money during many weary years, what we could have prevented by reasonable precaution.

We have said that law without public opinion is worth little. Indeed, such laws as we already have are rarely enforced. There is a law in Pennsylvania which makes it the duty of the commissioners of each county to appoint persons to ferret out forest-incendiaries, and yet Professor Rothrock asserts that he does not know of an instance in which this statute has been complied with. The newspapers in cities may talk vigorously about enforcing fire laws, but the public opinion which is efficient in this matter must prevail in the neighborhood of the woods themselves and among the men who are directly interested in them. People who live among our forests have seen them burn so often, while no effort was made to ascertain the cause or punish the carelessness or criminality of the incendiary, that they have naturally come to consider forest-property in a class by itself, with no right to protection against fire, like a dwelling-house or other property. Not until these views are radically changed and it is appreciated that a forest-fire, from its possible magnitude, is the worst possible fire, will legislation be of substantial value. What such legislation should be in its essence is well set forth in a circular to lumbermen prepared by Mr. B. E. Fernow, and sent out by the Department of Agriculture. An efficient law will assume that organized machinery must be pro-

vided to make it effective, and since the damage done by forest-fires extends beyond mere private and personal loss, the state must be represented by some one empowered to organize a fire service. Responsibility for the execution of the law must rest upon this executive head, and facilities for prosecuting offenders must be at his command. Nothing like any voluntary service can be trusted. Officials must be paid, and must be held responsible for care in performing their duties and obedience to regulations. This point cannot be insisted upon too strongly. Protection against fires will cost money, and this fact must be recognized at the outset. Again, the common interest in the protection of property must be recognized by creating financial liability for its enforcement on the part of the community and its members—that is, each county, for example, must be obliged to pay into the state treasury a certain sum for every acre burned over each year, as a fire indemnity fund, to be applied to the maintenance of the system and for the payment of damages to those whose property has been burned without neglect on their own part.

A law based on such principles is now in force in Maine, and the people of that state are proving that it can be made effective.

Native Trees and Shrubs about Montreal, Canada.—II.

SPIRÆA SALICIFOLIA, the common Meadow-sweet, is abundant. It often seems to differ somewhat in foliage and habit of growth when compared with plants growing wild in southern New England, but it is a very variable plant, and there are numerous known hybrids. *S. tomentosa*, Hardhack or Steeple Bush, common. *Physocarpus* (*Spiræa*) *opulifolius*, or Nine-bark, grows in stony soils, and especially along streams and borders of islands in the St. Lawrence.

Rubus odoratus, the purple-flowering Raspberry, is often locally called Thimbleberry, while in parts of Vermont and New Hampshire it is known as Mulberry. The fruit is rarely collected and eaten, except incidentally by pedestrians along the roads. *R. strigosus*, the wild Red Raspberry, is abundant, especially where woods have been cut or burned off. Immense quantities of the fruit are annually brought into the Montreal market from the surrounding country and farther north. It is usually brought in pails holding two or three gallons, but sometimes in rough boxes, and often sells at a very low price. It is used largely in making preserves or jams, vinegar, or "raspberry shrub." *R. occidentalis*, the Black Raspberry or Thimbleberry, also locally known as Scotch-cap or Black-cap, is plentiful, and the agreeable fruit is much sought for. It grows particularly well on decayed wood, stumps or logs. *R. neglectus*, a probable hybrid between the last two species, is not very rare. While the stems and foliage partake of the character of *R. occidentalis*, the fruits are more like those of the Red Raspberry, though not always so large, and they are of very pleasant flavor. Very often a large proportion of the flowers seem infertile. *R. villosus*, the common Blackberry, is common in some localities, but rarely seems prolific in fruit. *R. Canadensis*, the Low Blackberry or Dewberry, grows here also, and while the fruit is not often abundant it is sometimes large and sweet. *R. hispidus*, the Bristly or Swamp Blackberry, is to be found trailing among grass and herbage on low ground.

Rosa blanda is the most common wild Rose in this region. It is a dwarf, comparatively unarmed species, and is the largest-flowered of our eastern American native Roses. *R. Carolina* blossoms much later and is a much taller plant, found growing about the edges of swamps, ditches and other damp places. *R. rubiginosa*, the Sweet-brier Rose, or its apparent form, known as *R. micrantha*, has escaped from cultivation and appears naturalized. It is frequently met with in the Indian Reservation pastures and woods on the south side of the St. Lawrence, opposite the Lachine Rapids, as well as on Montreal Island.

Pyrus Malus, the common cultivated Apple, is to be found apparently naturalized and wild in many parts of the Caughnawaga Indian Reservation, on the south side of the St. Lawrence. It seems to delight in the warm, rocky limestone soil, where it mingles with wild Red Plums, Hawthorns and wild Grapes. The presence of these plants is generally a good indication of fine orchard and vineyard land. *P. nigra*, Sargent, the *P. arbutifolia*, var. *melanocarpa*, Hook., of Gray's *Manual*, is found in damp places.

Hawthorns occur in abundance in this region, the soil and other conditions being apparently well suited to them. The determination of the species is often a puzzling matter, and there seems every reason to believe that the species sometimes hybridize when growing together, resulting in departures from specific types.

Crataegus coccinea, the Scarlet-fruited Hawthorn, is found here, but the variety known as *macrantha*, Dudley, seems most abundant, and forms extensive thickets in some localities. It may yet be shown that this so-called variety is deserving of specific rank. In the pastures on the south side of the St. Lawrence thousands of these bushes or small trees have been browsed upon annually until they have assumed many odd shapes. Wherever browsed upon the plants become very dense and compact. They would make good hedge-plants if they did not sometimes show a tendency to throw up suckers. *C. mollis*, also called Scarlet Haw, is fairly common, ripening its very large, handsome, bright scarlet, pleasant-flavored, juicy fruits in the latter part of August, before any other kind. In local lists this species has often passed under the botanical name of the next. *C. tomentosa*. I have seen what I take to be this species on the south side of the St. Lawrence, near Chateauguay; but specimens were not collected or notes made. *C. punctata*, the Dotted Thorn, is the most handsome and becomes the largest of all the Hawthorns in this region. It is abundant, and grows as a low, horizontally branched tree, the branches sometimes spreading over a diameter of forty feet, and the short trunks having a circumference of three feet or more. From its peculiar horizontal habit, the tree may generally be identified at some distance. The leaves show considerable variation on different individuals, and the large, nearly round, fruit varies from a dull red to a bright yellow color, sprinkled over with white dots. The flesh is of firm texture, and in the early spring, after the snows have melted, the "haws" may be found fresh and sound among the leaves, and possessing a not unpleasant medlar-like flavor. *C. Crus-galli*, the Cockspur Thorn, is found growing naturally near the shores of the St. Lawrence, a couple of miles above the mouth of the Chateauguay River. The specimens are very distinct and typical, and this is probably the most northern recorded range of the species.

Arnold Arboretum.

J. G. Jack.

Foreign Correspondence.

London Letter.

AN ENGLISH VINEYARD.—An interesting paper was read at the meeting of the Royal Horticultural Society, last Tuesday, by Mr. Pettigrew, gardener to the Marquis of Bute at Cardiff Castle. It described a vineyard, formed nearly twenty years ago after the French system, on the side of a hill facing south, where the Vines are planted in rows and trained and pruned as in Burgundy. The grapes are used for wine-making, and wine of very good quality is obtained from them, some of it having realized the fancy price of over five pounds per dozen. The cultivation of the Grapevine in the open air in England for its fruit is so rarely practiced that many people think it impossible. But Mr. Pettigrew has shown that very good fruit can be grown in a field in South Wales, good enough to be eaten as dessert, and if used in the making of wine a profitable enough crop. The record of vintages, however, shows the precariousness of the experiment, unfavorable seasons having se-

riously affected the yield, which in some years was little or nothing. But in a favorable season, such as that of 1887, the crop was an abundant one, and 3,600 bottles of good wine were obtained from it. The best season of all was last year, when the crop was exceptionally heavy, and yielded 12,000 bottles of wine, which realized three pounds per dozen. The extent of the vineyard is about four acres. The variety of Grape grown is a French one named Gammy Noir. The wine is made on the estate under the superintendence of Mr. Pettigrew.

FOREIGN FRUIT.—The lot of the English grower of fruit for the home market is being made harder, and, as things are now tending, will soon become insupportable. There is no question of the good qualities of much of the imported fruit obtainable in England now, for it is good enough in flavor for ordinary palates, and, as a rule, much cheaper than English-grown fruit can ever be. I bought Californian peaches and pears from a coster's barrow last Saturday which were delicious eating, and about one-third the price of English fruit of the same quality. The consumer generally wants as good an article as he can get at as low a price as possible, the question of its source being to him of little or no import. It is, therefore, of little help to English growers to offer, as the Board of Agriculture now does, to undertake to prosecute any one found selling foreign fruit for English-grown. I was not deterred from buying my peaches and pears by the information, readily supplied by the vender, that they were Californian. I know enough of the cost of producing such fruit in England to be certain that it could not pay if sold anything like so cheaply. As a consumer I welcome the tons of choice fruit now brought from south Africa, Australia, California, etc., but they mean something like starvation for the English growers of such fruit.

THE NATIONAL DAHLIA SOCIETY'S SHOW is now an annual event of almost as much importance as the great Rose Exhibition. It is held at the Crystal Palace, and invariably attracts great crowds. This year's show took place last week, when the exhibits were unusually numerous. Valuable prizes are competed for by exhibitors, who come from all parts of the country. The great Dahlia fanciers, such as Turner, of Slough; Keynes Williams & Co., of Salisbury; John Walker, of Thame; J. Burrell & Sons, of Cambridge; J. Cheal & Sons, of Crawley, sent large collections of fine blooms, the variety in size, color and form being truly astonishing. The improvement of the Dahlia as a garden-flower has been the direct outcome of the formation of the National Dahlia Society. The work of the breeder and grower among Dahlias is quite as remarkable as anything in horticulture, not even excepting Begonias and Roses.

PHYLLOCACTUSES.—While Cactuses generally receive very little attention from English horticulturists, the genus *Phyllocactus* is rapidly assuming a prominent position among popular plants for the greenhouse. Messrs. J. Veitch & Sons have now a large stock of seedlings and hybrids, many of them of recent origin, and they anticipate an eager demand for them when they are better known. No plants are more easy to manage, and there are not many which flower freer or make a finer display when in flower. There are all shades of color between pure white and crimson, and a considerable range of size from the gigantic variety known as J. T. Peacock, which has flowers nearly a foot across, to the smaller varieties, such as *carminata*, a seedling with flowers no larger than rose-buds. If planted out-of-doors for the summer and lifted and kept in a dry shed till they begin to show flower, these plants make a magnificent display.

HEDYSARUM CORONARIUM, the "Sulla" of French, German and Italian agriculturists and the "French honeysuckle" of English gardens, is the subject of a eulogium in the *Gardeners' Chronicle* this week as a fodder-plant for dry countries, the writer, Captain Oliver, having seen it grown with astonishing success in Algeria. He commends it to the notice of English horticulturists as "a fit ornament for bedding purposes," evidently without knowing that it is an

old well-known garden plant with us. At Kew it grows freely in poor soil, the thick herbaceous stems reaching a length of six feet, ramifying freely and bearing pinnate leaves four to six inches long and stout axillary racemes of crimson elongated clover-like heads, suggestive of "Crimson Clover," or "Red Trifolium," to which it is closely allied. It certainly deserves the attention of agriculturists in warm, temperate regions where a quick-growing, juicy fodder-plant is useful, and it is ornamental enough for the garden. It is an annual, ripens seeds freely and comes up readily if sown in spring.

NEW PLANTS.—Among the exhibits at the last meeting of the Royal Horticultural Society the following plants were noteworthy :

Cattleya gigas, Countess of Derby : A magnificent variety which fully deserved the first-class certificate awarded to it. The flowers are those of a good form of the type, but the petals and sepals are pure white, and the labellum a gorgeous arrangement of crimson, purple and yellow. It was shown by Mr. T. W. Statter, of Manchester, who possesses a collection of Orchids of exceptional value.

Cypripedium Charles Richman : This hybrid was certificated last year when it was shown by its raiser, Mr. C. Richman, of Trowbridge. It was again put forward this week for a certificate by Monsieur Jules Hye, of Ghent, who had raised it independently from the same parents as produced Mr. Richman's plants, namely, *C. bellatulum* and *C. barbatum*. This time it was awarded a first-class certificate. It may be called *C. bellatulum*, with a tall scape and a dark rose and brown lip, the dorsal sepal being white with purplish veins.

Nepenthes mixta sanguinea : The type is one of the very finest hybrid pitcher plants yet raised, its parents being *N. Curtisii* and *N. Northiana*. This new variety, which easily won a first-class certificate, differs in having the pitchers colored blood-red, with large blotches of coppery red, the lid being especially brilliant. It was shown by its raisers, Messrs. J. Veitch & Sons.

CROCOSMA AUREA IMPERIALIS.—This is not a new plant, but it deserves the first-class certificate awarded to it if only to bring it into more prominent notice. At Kew it has been grown for some years in a sunny south border, where it forms stems four feet high and bears flowers three inches across, of the richest orange color. It was first distributed by Herr Max Leichtlin about six years ago. It is one of the very best of the hardier Cape bulbous plants.

London.

W. Watson.

New or Little-known Plants.

Todea barbara.

THE illustration represents a fine specimen of the Square Fern of Australia which has now been in cultivation at the Botanic Garden of McGill University for the past two years. The plant was donated by Baron F. von Mueller, of Melbourne, Australia. Shipped at Easter, 1892, it reached Montreal in excellent condition early the following July, and weighed with its packing-case more than two tons. As soon as placed in position it commenced a vigorous growth, which it has maintained most satisfactorily.

This specimen is one of the few known giants of the species. In his original letter Baron von Mueller stated that the estimated age of the plant was between 250 and 300 years, and that during his forty years of exploration in Australia only nine others had been found. These were all distributed to the various botanical centres of Europe through the liberality of Baron Mueller, and one of the finest of these specimens is to be seen at the Royal Gardens, Kew. Since the reception of the Montreal specimen, another, but smaller one, has been discovered, and last year was forwarded to the Botanic Garden of Harvard University. At the time the photograph was taken, the Montreal specimen had reached a height of about nine feet, with a spread of ten feet.

The genus *Todea* is interesting as being essentially Australasian, since only one of the four known species extends beyond this limit into southern Africa. The species at present known are *T. barbara*, Moore (*T. Africana*, Willd.); *T. superba*, Col., *T. Fraseri*, H. & G., and *T. hymenophylloides*, Rich. & Less.

The *Todeas* find their north temperate representatives in the genus *Osmunda*, of which there are three well-known species in this region. *Todea* is separable from *Osmunda* by its dorsal fructification, a distinction not regarded as valid by some botanists, since we find that Baron Mueller* combines both genera under the latter name, basing this arrangement upon the character of the sporangium, which is the same in each case.

The general habit of growth of the *Todeas* is that of the *Polypodiaceæ*. In *T. barbara*, the plant body is made up of a number of short, thick stems, about six to nine inches long, which combine to form a quadrangular mass constituting the trunk, the whole rising one foot or more above the ground. The consolidated stem mass increases with age, and in the Montreal specimen is nearly three feet high.

This plant thrives under ordinary greenhouse treatment, and is benefited by watering somewhat freely, especially with water containing a small amount of saline matter.

Baron Mueller writes me that, unlike *Gleichenia dicarpa* and *Lomaria alpina*, this plant is not alpine, and although it will readily survive moderate frost, the exact degree of cold which it will endure has never been ascertained. At all events, it should be carefully guarded against severe frosts.

As an addition to large collections, this plant is a most desirable acquisition, and small specimens would doubtless be appreciated in ordinary conservatory collections, although the coarse character of the foliage might tend to exclude it from collections where beauty is a leading consideration.

Botanic Gardens, McGill University.

D. P. Penhallow.

Plant Notes.

PRUNUS MARITIMA.—The Beach Plum is a rather common plant all along our eastern coast. It is usually a low bush three or four feet high, often growing on sand dunes, sometimes straggling, but often quite compact. It flourishes, however, on better soil, and in good garden-land makes a neat tree-like plant some six or eight feet high. Just now it bears abundantly purple, and sometimes red, fruits, about as large as grapes, with a soft bloom, and sufficiently conspicuous to make it worthy of mention as a plant with ornamental fruits at this season. These, however, do not constitute its only beauty, because, when properly pruned, it spreads out into a neat and shapely specimen, and although its flowers are not snowy white they are borne in such great numbers that the plant is completely covered. It has the advantage, too, of flowering later than the other members of the family. In many places Beach plums are gathered largely for culinary purposes, and they are, as a rule, of good flavor, although somewhat astringent. No doubt, their good qualities could be improved by selection and, perhaps, by hybridizing, but individual wild plants can be found which really need no improvement. We recently tasted some of these plums, which were a clear amber color, and they could hardly be excelled by any other fruit of the season for richness of quality. No doubt, if such varieties were propagated they could be made profitable as a market fruit, and they are worthy of cultivation for home use. But, apart from this, the ornamental value of the plant is very considerable, and it can be recommended especially to lovers of American plants.

HYDRANGEA PANICULATA.—The variety of this plant known as *grandiflora* has become one of the most common shrubs planted for ornament in this country. Its enormous pani-

*Second Systematic Census of Australian Plants for 1889.

cles of sterile flowers are so conspicuous as to attract the attention of every one, and as it is easily propagated one or more specimens can often be seen on every lawn in a long village street. Under such circumstances the plant grows somewhat tiresome, although, of course, there are many situations where a shrub of such bold aspect is specially useful. The species of which this is a variety is quite different in appearance, since the terminal flowers only of the branches of the long panicles are neutral. These, however, with the perfect flowers, make a long plume-like, leafy inflorescence which is very graceful. It flowers about the same time as the variety *grandiflora*. Another plant has been sent out as *Hydrangea paniculata*, and has been considered an early-flowering form of this species. Whether closer investigation will confirm this view or not, the two plants are quite distinct from a horticultural standpoint. This early-flowering form begins to bloom in this vicinity early in July, and lasts for a full month. Indeed,

tiful, and it remains in good form for at least seven weeks. To reach its best proportions it must, of course, have room and food, but this is true of all plants of its class. It is a more attractive plant here than *Boltonia asteroides*, which is rather smaller and bears white flowers. The plant was figured for the first time in vol. v. of GARDEN AND FOREST, page 271, and we repeat the statement there made that it is one of the best of the tall perennial herbs which flower at this season.

CLEMATIS GRAVEOLENS.—This unpretentious, but pretty and attractive, *Clematis* must still be regarded as an uncommon, or almost rare, plant in American gardens, where *C. Jackmanni* and other showy types and the native *Virgin's Bower* are quite familiar. Yet *C. graveolens* is quite as hardy as any of these, will grow luxuriantly on a trellis, against a wall or in any other suitable place, and will produce flowers during a longer season. It will form stout perennial woody stems which will resist the winter cold



Fig. 63.—A specimen plant of *Todea barbara*.—See page 394.

its season of bloom is quite over before the late-flowering form begins to show a flower. Those who plant both these forms will have two months of bloom instead of one.

BOLTONIA LATISQUAMA.—Although this plant was discovered near the mouth of the Kansas River more than thirty years ago by Dr. Parry, who sent it to the Botanic Garden, Cambridge, from which place it was distributed, it is not yet common in cultivation. In their horticultural characteristics the *Boltonias*, of which there are two other species, resemble our tall *Asters*, this particular one having large lilac or pink-purple flower-heads an inch and a half in diameter. When properly cultivated it attains a height of six feet, and a mass of it now in bloom on the grounds of N. T. Kidder, Esq., of Milton, Massachusetts, is seven feet in diameter and completely covered with bloom. Even in so large a collection of autumn flowering plants as Mr. Kidder's, this *Boltonia* is conspicuously beau-

without artificial protection, but will do better if some shelter is given. While not a showy species, it stands almost unique among the hardier members of its own genus because of the pale greenish yellow color of its flowers. These are composed of four ovate, pointed, thick sepals, silky hairy on the inner side, and each about three-quarters of an inch or more in length. The anthers appear of a pale yellowish white color as they shed their pollen, and when the stamens and sepals fall away after maturity the remaining pistils become conspicuous with their covering of silky white hair. These pistils develop rapidly and soon form handsome heads of silky-tailed fruits almost as attractive as the flowers, and more conspicuous. The pinnated leaves are of a peculiar bluish or glaucous-green color. This *Clematis* was originally introduced from very high altitudes in Chinese Tartary, and described as heavy-scented, a term which does not seem to apply to the

plants in cultivation, although there is a slight agreeable odor. *C. graveolens* requires no unusual cultivation except a rich, warm, well-drained soil, and may be propagated by seeds, layers or cuttings. Layers should be partially severed before being covered with soil and should be kept moist. Cuttings may be made of young shoots placed in sand and loam in gentle heat.

ANEMONE JAPONICA, WHIRLWIND.—This is a recent introduction which varies from the well-known white Japanese Anemone, Honorine Joubert, only in having more numerous petals, the extra ones being rather small and irregular. The form, in fact, is similar to the semi-double reddish purple Anemone, which has never met with much appreciation as a garden-plant. The chaste simplicity of the white-flowered Japan Anemone has endeared it to all lovers of fine garden-plants, and it is questionable whether a change in the way of doubling is an improvement or a tendency to be encouraged. No doubt, there are collectors and growers who consider any such variation as a great gain, but we apprehend that the desire for mere freaks and oddities is passing away under the influence of a more refined taste.

COSMOS SULPHUREUS.—A yellow Cosmos, from seed received with those of other New Zealand plants, proves to be a variety, or, possibly, a species, distinct from *C. sulphureus*, Cav., as figured or shown in an herbarium specimen from Mexico, collected by Pringle, which has solitary heads on long naked peduncles; less finely divided leaves and the entire stem hirsute, pubescent and more rigid. By the way, this specimen has very attractive reddish orange flowers. The variety said to be from New Zealand, flowering in August from spring-sown seed, is an annual with numerous weak, smooth, branching stems. The flowers are borne on short peduncles, are five-petaled and a deep clear yellow in color and one inch to one and a half inches in diameter. Planted out, this Cosmos forms a low-growing attractive plant, useful for a front border.

Cultural Department.

Michaelmas Daisies.

THE hardy Asters at this time are in full flower in every wild field and neglected roadside. Familiarity with these common wild flowers, especially in the eastern states, has often caused their cultivation in the garden to be neglected, and it cannot be said that they are among plants generally cultivated. The determination of the different species has puzzled the botanists for many a year. The artist and the poet have often indicated the sentiment which is felt by the New Englander for these flowers, but the value of good forms in the garden seems to be known only to the hardy-plant fancier. At this time, even in small gardens, they show a distinctness and beauty quite unique, and they are a welcome foil to the prevailing yellow flowers of autumn. In larger plantations they are invaluable, for there the plants have larger scope to prove their effectiveness. On large estates, in a semi-wild park, outside the lawns and cultivated grounds, fine forms of Asters would be very effective at this season, and in public parks they would be attractive and pleasing in the woodlands. There are Asters in Central Park, but many better forms should be grown in the leading park of the country. This leads me to say that while Asters are much alike to careless observers, there is really a wide range of kinds in our American species and their numerous hybrids. In flower they range in coloring from white, pink, rose, red-purple to shades of blue-purple or light lavender. These flowers are sometimes minute stars, but vary in diameter to two inches. The plants are sometimes trailed for a rockery; others, again, stand six or seven feet high. The foliage varies, but is not notable when the plants are in flower. The form or habit of the plants also varies much. Some plants are covered with dense masses of starry flowers, while others are much more branched and open.

One may be quite familiar with the Asters of the field and not have seen this great variation, for even good forms are not often found in the wild state in good condition. They appreciate cultivation in deep, well-manured, somewhat damp soil. Fanciers of hardy plants are well aware how difficult it is to secure correctly named species of Asters. Every nursery seems to be a law unto itself in naming these plants, and I know of no family of which one could buy more species under

the same name or in which more names are given to one species. This confusion seems to prevail abroad as well as in this country, or has done so heretofore, though there is prospect of an improvement. The English have always enjoyed these plants thoroughly, and Asters have thriven in their gardens, and many excellent hybrids have been produced. In view of the confusion of names, the Royal Horticultural Society collected all available kinds in their Chiswick garden four or five years ago; they have there been compared and studied by the most competent growers and observers and carefully named. The species have been determined and the garden varieties have been given common English names. It is to be hoped that the Chiswick names will become the standard ones, universally recognized by growers. There are a great number of garden forms, varying to a great or lesser extent, for they hybridize in cultivation as freely as the Columbines, so that constantly varying forms may be expected from seedlings. It is said that a large proportion of Asters in English gardens are crosses between *A. lævis* and *A. Novi-Belgii*.

A large garden would be required for all the named Asters, but probably few would care for more than a dozen distinct kinds. I have been interested this season in about three dozen kinds, plants of which were received early in the year. They have been rather crowded, and in the absence of careful cultivation scarcely show their true form. It is not easy to describe the differences, but it may be allowed to name a few distinct kinds. *A. cordifolius*, var. *Elegans* (syn. *undulatus*), has a great number of very small lilac flowers, and is erect and bushy. *A. ericoides* has linear leaves and small white flowers, very distinct. Of the *lævis* hybrids, *Pygmalion*, light lilac, flowered in August; *Flora* is a darker lilac, while *Apollo* is more sparingly branched and has larger flowers with few petals. *A. Novæ Angliæ præcox* is the reddish purple Aster of our fields. The variety known as *roseus* is a pure rose form of very satisfactory color. *Pulchellus* is a large-flowered plant, with rather thin curling incurving petals. I saw this plant in a nursery lately labeled *roseus*. Of the *Novi-Belgii* hybrids, good lilac forms are *Archer Hind*, *Harpur Crewe* and *Robert Parker*; the latter is especially good. Of the white forms of *Novi-Belgii*, *John Wood* and *Purity* are both excellent. *A. puniceus pulcherimus* flowered early and was one of the most effective. The plant was much branched, the foliage more prominent than usual, and the flowers a pretty light lilac. *A. versicolor Antigone* and *Themis* are small white-flowered kinds, good in a collection, though white-flowered Asters are the least effective of the family—at least, here where the Daisies of spring-time and the wild Carrots of summer are succeeded in equal profusion by the small white Aster *vimineus*. Our foreign friends sometimes remark on our lack of appreciation for many of our native plants, but some of them are in their true place outside of our gardens, especially autumn-flowering kinds, which, in the broad meadows, make a scene of beauty, beside which our contracted gardens are dull and humble, indeed.

Elizabeth, N. J.

J. N. Gerard.

Work for the Season.

THE housing of tender plants is an important part of the work of this season. This should not be delayed, for, even if such plants have not been checked by cold, they are liable to injury from the heavy rains that may be expected at this time. The various stock plants that will be needed to supply cuttings for next season's bedding-plants should at once be secured if this has not already been attended to, and it is a good plan to put in a few boxes or pans of cuttings, for these early-rooted plants will furnish an extra supply of cuttings in the spring. Where formal bedding is practiced, such plants as *Alternantheras*, *Feverfew*, *Coleus*, *Cotyledons* and *Kleinia repens* will be required, and an abundance of stock plants must be provided for this purpose, excepting in the case of the *Feverfew*, which is readily obtainable from seed. The proper disposition of these various stock plants is quite a serious question where the greenhouse area is restricted, and a heated pit or frame is a great convenience in such cases. Part of this should be quite shallow, in order to keep *Alternantheras* and other low-growing plants near to the glass, while the remainder of the pit should be deep enough to accommodate *Azaleas*, *Carnations*, *Cytisus* and other cool-house plants until they are needed to be brought on for conservatory or house decoration. A structure of this character fifty feet long and six feet wide is comparatively inexpensive, and can be heated with one line of pipe around it, and will make room for a quantity of plants, many of which are especially difficult to provide for during the *Chrysanthemum* season.

Carnations should have been housed before this date; but, to insure health and to enable the plants to hold their foliage at the bottom, it is best to give them a reasonable amount of space, and also to stake them up before the growths fall over. Various wire devices are now to be had for the latter purpose, and one of the most convenient of these is a wire standard to which are attached several adjustable wire rings.

Primulas and Cyclamens that have been grown in a frame during the summer had better be removed to the greenhouse, for they will then be much more under control, and less likely to suffer from an oversupply of water. Chrysanthemums will naturally demand a great deal of space and attention for the next two months, some of the chief points in their care being the disbudding and tying of those intended for exhibition, and their protection against insects, since it is impossible to produce perfect flowers with a companion crop of aphids. To keep down the latter pest it is a good plan to spread tobacco-stems among the plants, and to renew the dose as often as the vapor becomes weak.

The fall crop of bulbs for winter and spring blooming will also come to hand at about this time. *Lilium longiflorum* and *L. Harrisii* will be among the first to arrive, and the sooner these are potted and placed in a cold frame the better. My practice has always been to plant the Lilies in their blooming pots at once, rather than to put them in small pots at first, and give them another shift later in the season.

Tulips, Hyacinths and Freesias should also be planted as soon as the bulbs arrive, for a strong root-growth is essential to success with them. Violets seem to have become so subject to fungoid diseases in some localities that many growers have dropped them altogether, but if clean stock can be had to start with it is well worth the additional labor to spray them regularly with some germicide and thus secure a crop of these charming flowers. One of the first requirements for successful Violet culture is plentiful ventilation. The Violet is essentially a fresh-air plant. At this season, too, overwatering should be carefully avoided, although the other extreme is quite as bad, for drought usually results in an attack of red spider.

Holmesburg, Pa.

W. H. Taplin.

Begonias as Bedding Plants.

THE past summer has given additional proof, if any were needed, of the great value of Begonias in the flower-garden. No bedding plants, except, perhaps, Cannas, have flowered so well or so continuously or have made a display equally striking. In the very hot and dry weather the tuberous-rooted section did admirably. A slight shade, copious watering and an occasional feeding of liquid-manure seemed to suit them to a nicety, and plants raised from seed sown in February gave any number of flowers six inches in diameter. Just now, when the Geraniums look old and bedraggled, as they too often do after heavy rain-storms, the Begonia-beds are as attractive as ever.

I should like to emphasize what was said in a recent number of GARDEN AND FOREST as to the value of the variety *Vernon* of *Begonia semperflorens*. After two years' experience, I cannot speak too highly of it, and whether growing in a heavily shaded place or in the full sunshine it seems to flower equally well. The plants are smothered with bloom all the season through. In the full sunshine the leaves take on a beautiful bronze hue, while in the shade they retain their dark rich green color.

This year we had a border of Begonias, consisting of many winter-blooming sorts and several ornamental-leaved varieties, the green and the variegated forms being evenly mixed, and the whole was bordered with a row of the tuberous-rooted kinds. The border is shaded from the midday sun, and none of the plants were scorched. Beside an occasional watering and a little topping to keep them shapely they had little care, and yet they made one of the most attractive borders on the place. When lifted with good balls of earth at the root, carefully potted, placed in a shaded house and sprayed for a few days, these make excellent plants for decorative use in winter. None of those which we have lifted have wilted, and hardly a leaf has dropped. So much better plants are secured from those which are set out, that we shall hereafter discontinue the raising of fibrous-rooted Begonias in pots during the summer.

Among the varieties which do specially well and flowered profusely with us are the following: *Semperflorens* *Vernon*, *Semperflorens alba metallica*, *maculata*, *Carrieri*, *incarnata*, *Weltoniensis*, *Gilsonii*, *Sutton's Perfection*, *Paul Bruant* and *Bijou de Gand*. Plants of the *Rex* section are very useful, but they do best in a heavily shaded place. In rock-work they are most effective and make excellent plants to lift at this season

for winter use in the conservatory. To have good plants at bedding-out time we insert sections of leaves in the propagating-bed about the end of November, from which we have good stock in four-inch pots in May. When lifted at this season and put in six or eight inch pots they make much finer plants than those which had been grown along in pots all the season.

Taunton, Mass.

W. N. Craig.

Pansy Seedlings.—It is now the custom among some of the large growers of Pansies to sow their seeds broadcast in the open in August. It is found that great numbers of plants can be grown very economically in this way, and that they are sturdier and stronger than those more tenderly treated in frames. It would seem a rather risky matter to broadcast these expensive seeds in such an August as we have just passed, a season about as dry as ever known here, after weeks of entire absence of rain, yet a few days ago I saw a large plot of sturdy seedlings, numbering many thousands, which were as vigorous as could be desired, and where the germination had been so general that the plants stood rather too thickly. The seed had been sown broadcast on well-prepared ground, which was covered over with a light mulch of short manure after being compacted. As soon as germination was well advanced the mulch was gradually removed and the plants fully exposed.

Elizabeth, N. J.

G.

Grapes Prematurely Falling.—The grape-growers of Chautauqua County will lose part of the crop this season by what is called "rattling" from the stems. The grapes begin to rattle first from the end of the cluster, and generally the clusters farthest from the main vine are earliest affected. The outer margin of the leaves is commonly found to be dried up. The rattled fruit has an insipid taste. In vineyards on newly plowed sod, and in old-established vineyards, the trouble does not appear so serious as in other places, and in many cases vineyards affected last year are not troubled this season. The grapes rattle on high and on low land, on rich and on poor land, on heavy and on light soils. The cause of the trouble is not known, though it is generally supposed in Chautauqua County to come from a lack of potash in the soil; but while feeding the vines with potash has stopped the rattling in some vineyards, it has not proved a preventive in all cases. Observation seems to show that a faulty nutrition of the vine is at the root of the difficulty, but the conditions which cause this weakness are not satisfactorily determined. There is a possibility that some specific disease is affecting the vines, and its character may yet be discovered.

Cornell University.

G. Harold Powell.

Correspondence.

Vases for Cut Flowers.

To the Editor of GARDEN AND FOREST:

Sir,—The article entitled "Vases for Cut Flowers," in your issue for September 19th, seemed to me to contain many words of wisdom, and the teachings of wisdom—that is, of good taste—are too rarely followed in the current methods of arranging flowers for the drawing-room or the dinner-table. And yet I should like to have space to note one or two passages in which I think your correspondent has omitted to mention important points to be considered in choosing flower-vessels, or has restricted the field of choice within too narrow limits.

In the first place, he almost entirely bars out glass vessels by saying that "All colored glasses are to be rejected, and white or colorless glasses are also objectionable, since, as a rule, flower-stems are unsightly." True, he makes the admission that this rule has exceptions, but, in my judgment, the exceptions are so numerous that the rule should not be laid down. No material for flower-vessels is more beautiful in itself than good glass, for its fragility and the light reflected from its surface give it a delicacy of aspect which accords well with the floral beauty it contains. Moreover, while the stems of many flowers are so unsightly that it is well to conceal them in an opaque vessel, in other cases the stems and lower leaves of cut flowers form an important element of their beauty. A transparent vase, through which the water and inner stems and leaves may be clearly seen, displays a fine group of roses to better advantage than anything else. Indeed, whenever actual ugliness cannot be charged against the lower portions of a cut flower, their revelation of the individual manner of growth of the specimen is generally advantageous. Pure white glass or transparent opalescent glass seems to me an excellent material for flower-vases, and one which should be

more generally employed than it now is; for, in addition to the merits I have named, it is extremely simple and inconspicuous in effect, and this, as your correspondent explains, is a prime merit in vessels whose chief rôle should be to contribute to the beauty of their contents rather than attract attention on their own account.

I think, also, that the judgment against "all colored glass" should be relaxed in favor of dark green glass, at least. No vessels could be more appropriate for receiving flowers of almost every kind than the bowls and vases of old green glass—somewhat mottled in tone, and, therefore, less mechanical in effect than more perfectly manufactured modern glass—which may sometimes be picked up in antiquary shops abroad. And failing these, modern products of English or Bohemian origin may easily be had. In England especially green glasses have in recent years been produced, of such excellent color and in so good a variety of sizes and shapes, that an assortment of them is almost indispensable to any one who has many flowers to arrange indoors, and desires to show them to the best advantage.

As for the "pure neutral gray," which in opaque pottery is commended as preferable to any other color, opinions may differ. Such a tint does not harmonize with blossoms of all colors, or, at least, it does not show them all to the best possible advantage. And, again, it may not associate well with the background against which the vase is to be placed, or the other objects among which it is to stand. And this brings me to what I consider the most serious omission in the article referred to. Its writer does not point out that a vase should be selected with reference to its proposed environment no less than to the character of its contents. A due degree of inconspicuousness is always to be desired; but a gray vase, set, for instance, against a crimson curtain, would be more conspicuous than a red one analogous to the curtain in tone; and thus there may easily be cases when a red, a blue, a yellow, or even an orange-colored vessel is preferable to one of the quietest neutral tint. Imagine a great clump of orange-colored Butterfly-weed in a Japanese bowl of rather lighter tone, set against a yellow curtain, and you will understand that such an arrangement might well seem more harmonious and simple than if the vessel had been of a neutral gray. Opaque green vases, even of quite a bright tint, are often the most harmonious that could be selected, especially if much foliage is used with the flowers. And, in short, it may be said that the required quietness of effect, the required effacement of the vessel as such in favor of its contents, may best be secured, very often, by repeating, in some sort, the color of the blossoms it holds and the dominant color-note in its proposed environment.

Again, is not the dictum that a vase "should be without ornamentation of any kind and of a single and uniform tint of color" a trifle too sweeping? Conspicuous ornamentation, greatly diversified colors, should, of course, be shunned, but one would hardly wish to banish all variety in color, or all use of patterned vessels after having seen a finely shaped vase of Japanese or of old Delft blue-and-white filled with white roses or lilacs or narcissus, or (this time an harmonious contrast, not a concord, being sought) with bold-colored tulips or daffodils, and placed against a blue and white curtain, or on a dinner-table where the plates and dishes are likewise of blue-and-white ware. Surely the eye would be pleased, not offended, by such an arrangement; the beauty and character of the flowers would be enhanced, not hurt. And the test of what is right in matters of taste is the satisfaction of the cultivated eye rather than a close adherence to canons which, however correct in a general sense, must always admit of exceptions while art and beauty are living and perpetually varying things.

With regard to form, I should like to plead for greater freedom of choice. It is not needful that all tall vessels should be broadly flaring at the top. The plain cylindrical form to which objection is made has a true beauty of its own; the oriental races appreciate this fact and do not confine themselves to cylinders of bamboo "which from its irregular surface loses the stiffness of the cylindrical form." This very stiffness may be desirable in a flower-holder, either as justifying the perpendicular lines of certain vigorous flower-stems, or as forming a pleasing contrast to others of a less rigid sort. Nor is it evident that "all forms which bulge below . . . must be rejected." There are no more beautiful oriental vases than some of those in which a spherical lower portion bears a tall, narrow cylindrical upper portion; and these shapes in pottery or in glass are particularly good for the display of two or three blossoms of large size and fine form—for instance, of two or three well-developed hot-house roses.

In a word, while it is sound doctrine that all bizarre shapes

and all conspicuous decorations and vivid contrasts of color should be avoided in flower-holders, on the other hand all simple shapes which are good in themselves, all single-toned vessels, even of very vivid hues, and many kinds of patterned vessels, where the designs are as unobtrusive as they are in blue-and-white ware, may be put to excellent service for the reception of cut flowers. Indeed, the greater variety we have to choose from the more likely we shall be to do full justice if we have flowers of many sorts to arrange. But good taste must be exercised in choosing which vessel shall be used for each special purpose; and this means that the color, the size, the habit and the number of the blossoms must in each case be considered, and likewise the particular spot where the filled vessel is to stand.

New York.

M. G. Van Rensselaer.

Magnolia glauca.

To the Editor of GARDEN AND FOREST:

Sir,—Certain trees, which are at home and common on the lowlands of our Atlantic seaboard, reappear along the western slopes of the southern Alleghenies, and the most notable are *Ilex opaca* and *Liquidambar styraciflua*. Frequent in eastern Tennessee, they extend as far north as the banks of the Kanawha and New River, in West Virginia, and perhaps further. It is not surprising, therefore, to have the occurrence of their eastern associate, *Magnolia glauca*, reported from the same region. Some years ago the late Mr. Leo Lesquereux told me that he had seen it in western Pennsylvania, in Lawrence County, next the Ohio border, and, at my request, wrote the following account of his discovery in a letter dated "Columbus, Ohio, October 21st, 1884." "About *Magnolia glauca*, seen on the edge of Slippery Rock Creek, above Wurtemberg, I can speak only from impression and remembrance. A group of four or five small trees first caught my view. From the color of the leaves I did not doubt the species was *Magnolia glauca*. The white under-surface of the leaves is a character easily recognized. But I did not take any specimen with me, for I was then on a tour of geological exploration, with nothing but my note-book and hammer, and stopping at farm-houses for lodging and entertainment. The spot was rendered more interesting to me by the presence in the vicinity of large blocks of sandstone, covered with a moss, *Rhabdoweisia denticulata*, generally found on the highest mountain-tops, and there, out of place as well as the *Magnolia*, which I had never seen before in Pennsylvania. It would be very easy to find the locality. Following the bed of the stream from Wurtemberg, near the mouth of the Slippery Rock Creek, in the Conoquenessing, for about three miles, it would not be possible to miss the trees. The bottom of the creek is rough and there is no road on its banks, at least there was none then, and yet I passed along it twice or thrice."

Not being able to visit in person the spot here indicated, I conveyed the information, at sundry times after the receipt of the letter, to persons resident in that part of the state likely to have an interest in the matter, one of whom made search for the trees without success. During the present summer the task was undertaken by my friend, Mr. W. T. Bell, florist, of Franklin, Venango County. Mr. Bell, by persistent effort, had rediscovered, in his own county, *Frasera Carolinensis*, which was collected there by Dr. Garber in 1869, and, hoping the same good luck in this case, journeyed to Slippery Rock for the express purpose. The directions given were carefully followed up, only to end in disappointment. To explain the failure he suggested that Mr. Lesquereux may have been deceived in his observation. But a naturalist so eminent and so familiar with the leaves and leaf-forms of our forest-trees could not have mistaken anything else for a *Magnolia*. Another suggestion of Mr. Bell is far more probable. A railroad has been built along the stream, since 1884, and the embankment may have buried the "group of four or five small trees." Instances of the kind are not rare. Fires, cattle and the axe are not the only ravagers of the plant-world.

In Pennsylvania, *Ilex opaca* ascends the Susquehanna River to Cold Spring, in the mountains of Dauphin County, while *Liquidambar styraciflua* is confined to a narrow belt along the Delaware, above and below Philadelphia. Neither of them reappears, as far as known, in the state west of the Alleghenies. *Magnolia glauca* extends inland to a swamp on the summit of a ridge of the South Mountain, near Cornwall, Lebanon County, at an altitude of about five hundred feet. That it will some day be rediscovered west of the Alleghenies is highly probable, and the other two trees may also exist in the same region.

Lafayette College, Easton, Pa.

Thomas C. Porter.

The Forest.

The Forests of Siberia.

WE have already called attention to the important work upon the forests of Russia published in the fourth volume of *The Industries of Russia*, translated by John Martin Crawford, the United States Consul-General to Russia. In the fifth volume of the same work, which is devoted to "Siberia and the great Siberian Railway," will be found an equally interesting sketch of the forests of Siberia, which are destined to play an important part in the development of northern and central Asia, which, when this railroad is completed, will become one of the great wheat-producing regions of the world, and destined to support an immense population. The composition of the Siberian forest is interesting, too, as bearing on the future timber-supply of the world and as showing that for certain classes of timber, like oak, ash and the best building material, central Asia, if it is ever to become an important seat of population, will have to depend upon the islands of Saghalin and Yezo, and perhaps, too, upon British Columbia and western Washington and Oregon.

The vast forest-resources of Siberia are unequally distributed over its enormous territory. The great forests are situated in the north, while the south is nearly treeless. The whole region may be divided into three zones, each distinguished by characteristic features and situated in a direction from west to east. The zone of what is here called the "northern tall-stemmed woodlands" stretches uninterruptedly from the Ural Mountains to the eastern shores of Kamtchatka; on the north it borders on the tundras, the limit of the growth of the larger vegetation, and on the south it extends to the region suitable for agriculture. It is interrupted by large masses of impassable bogs, and is composed of Pines, Larches and Firs. The deciduous trees are few and insignificant, although Willows and Aspens border the swamps and Birches occur in places. This northern forest occupies all that part of Siberia where agriculture is impossible from the deficient quantity of heat during the five months of vegetative activity. The fixed population is insignificant and the raising of grain sporadic in small patches on its southern border. There are localities, we are told, in this great forest-belt, "where for tens and hundreds of versts in every direction stand clean plantations of Pine, which, with their interlaced summits, hide the sky. The absolutely naked trunks, rising perfectly straight to an enormous height, are so monotonous that a man who once chances into such a part of the Siberian taiga, or even a wild beast, cannot find his way out again. Access to such places is difficult, and the timber contained in them is so far without value, but with the growth of the population, the improvement of roads and the destruction of the forests in the inhabited parts, means will be found to make use of the now remote forest-resources. The scourge of the forests of this zone at the present time is only the forest-fires, not infrequently devastating hundreds of versts. The burned timber is, however, rapidly replaced by young underwood growing up under the influence of natural selection."

The zone of Birch-forest covers the whole of the low-lying or so-called steppe portion of Siberia. This zone is occupied by a settled population and practically coincides with the cultivated or agricultural part of Siberia. The principal and only valuable tree in this region is the Birch, with a slight admixture of Aspens and Willows along the banks of rivers. Coniferous trees are entirely absent. "The Birch thrives on a chernoziom soil, and therefore this zone is the most populated and particularly characteristic of western Siberia, between the middle course of the Tobol and the upper waters of the Obi. This region embraces the so-called steppes of Ishimsk, Akmolinsk, Kurudzhinsk and Barabinsk. Although it is usual to understand by the word steppe an absolutely treeless space, in Siberia, with the exception of the whole Kirghiz steppe region, which

produces over large areas shrubs used as fuel in the mining works, all the remaining plains are covered, more or less thickly, with Birch patches or spinnies, giving the locality a very peculiar appearance. These Birch copses, mingling, when viewed at a distance, produce the effect of an unbroken forest. Traversing hundreds and thousands of versts by the western Siberian tract, the traveler sees everywhere on the horizon, as it were, uninterrupted forests. The distribution of Birch patches over the steppe surface may for the most part be called ideal, constituting precisely that combination of wood, arable land and pasture which is everywhere and at all times desirable in the interests of agriculture. Thanks alone to this happy disposition of the forests in this part of Siberia, notwithstanding the not wholly favorable atmospheric conditions and the mediocre soil, crops and grass thrive well."

The forests of the south are confined to the mountain slopes of the ranges which extend in an almost uninterrupted chain, under various names, from one end of Siberia to the other. In this forest Conifers prevail; they yield timber of excellent quality, although often difficult to obtain, being remote from centres of habitation and usually confined to steep inaccessible slopes. These mountain forests, guarding as they do the sources of swift-flowing streams, are extremely important in the economy of the country.

During the last thirty years the Government of Russia has been paying some attention to the care of the forests of western Siberia; in 1863, in the Governments of Tomsk and Tobolsk, temporary regulations were introduced establishing a tax per stump for the use of wood. Preservation of the forest was imposed upon the rural population, who, in return, were allowed to make a free use for their own needs, but not for sale. In 1869 a law was promulgated granting to a corporation the unlimited right of making use of Siberian timber for industrial purposes. Since 1884 the forests of western Siberia have been placed upon the same footing as that by which the Crown forests of European Russia are managed, that is by a paid forest-guard.

In eastern Siberia the inhabitants are still allowed free use of the forest for their needs, and there is as yet no forest control. In the Amur country, where the forests are believed to be extraordinarily varied and valuable, steps have recently been taken toward ascertaining the extent of the Crown forests and for bringing them under state control.

Recent Publications.

Johnson's Dictionary. Revised and enlarged, by C. H. Wright and D. Dewar.

The Cottage Gardeners' Dictionary, which was published nearly half a century ago, was enlarged and corrected several times before it was twenty years old. It was revised in 1863, and although several supplements have been issued since that time, this new edition is the result of the first thorough revision which has been attempted in thirty years. The editors are both competent men and they have had every facility for making their work complete and accurate, so that the book is practically a new one as well as a good one. One cannot expect such fullness of detail in one volume as is found in the four volumes of Nicholson's Dictionary, but by careful methods of abbreviation the work has been made very compact, and it contains a surprising amount of matter. The very sharp, clear type which has been used facilitates quick reference, and a great many people, besides gardeners, who have to do with plants and plant names, will find it a useful addition to the working library. Of course, the list of plants is the chief merit of a book of this kind, and unusual care seems to have been taken with the nomenclature, the synonyms being placed in the body of the book, as they should be, instead of being in a separate list. The book, however, contains much besides the names of plants. There are cultural directions, necessarily brief, but always good; descriptions of insects injurious to garden-plants, often with good figures; notes on fungous diseases and their approved

remedies; discussions on various fertilizers and their special values; references to plant-portraits when trustworthy ones can be found; descriptions of garden structures, implements, appliances, methods—in short, it is a comprehensive book of reference in which the selection and exclusion of topics have been made with conscientious and intelligent care.

The book is published in America by Macmillan & Co., New York, and it is well worth the \$4.00 for which it is sold.

Notes.

Professor Lloyd, of the Pacific University of Oregon, in a note about the Tree Ipomœas of Mexico, which were described and figured in our issue for September 12th, states that the common name of *Ipomœa arborescens* in Sonora is Palo blanco, which means the white tree, a name significant of its pale, ghost-like appearance.

A small area has been successfully planted with Licorice in San Joaquin County, California, and the horticultural papers suggest that this industry could be profitably extended. Licorice-roots, to the value of about a million and a half dollars, are imported every year, and in ordinary seasons 20,000 acres of land could furnish this entire product.

If Tomato-plants are covered on nights when frost threatens with a hay-cap, or even a tent of heavy paper, they will escape injury, unless the temperature falls very low. Even loose straw shaken over them will protect them, and since weeks of warm weather often follow the earliest frosts, the season for this fruit can be greatly prolonged by this precaution.

Since the rains in early September the Apple-orchards have undergone a complete transformation. The drought was so long and severe that some of the leaves on the trees and part of the fruit fell to the ground, while that which remained was very small. When the supply of water came the apples began to swell out, and trees which looked on the first of September as if they bore no crop worth picking, are now loaded with an abundance of full-sized and beautifully colored fruit. It is the universal testimony among fruit-growers hereabout that rarely, if ever, have they seen apples increase in size with such rapidity.

An orchard of Keiffer Pears, near Moorestown, New Jersey, containing a thousand trees in a solid block, has never borne even half of a poor crop, while the trees in the middle of the orchard have never borne anything at all. Trees on the outer rows, where the blossoms can be fertilized by bees which visit other varieties of Pears, have borne fruit, but not abundantly. Mr. Isaac Rogers, who makes this statement in the *Farm Journal*, adds that if a hundred Le Conte Pear-trees had been planted with the Keiffer trees the orchard would have paid like a gold mine. Whether this last statement is strictly true or not, it certainly has been amply demonstrated that many varieties of orchard fruits and of small fruits also do much better when other varieties are planted among them, since they are partially, and sometimes almost absolutely, barren unless cross-fertilized.

A marked change of decoration in the windows of flower-stores plainly indicates the coming of autumn. Instead of Sweet Peas and other summer flowers there are now displayed branches with bright-colored autumn foliage or brighter-colored berries, wild Asters and Golden-rod; while in one window large branches of Pokeweed, *Phytolacca decandra*, with their long racemes of dark purple berries, broad tropical leaves and crimson stems, produce a marked effect. The first Chrysanthemums were shown on Saturday, and fairly good flowers of several of the varieties sent out by Delaux are now for sale. Violets are just coming in, and are not yet at their best. Gaillardias, Gardenias, Bouvardias, Tuberoses, Gladioli, Kniphofias, Cosmos, white China Asters and Dahlias are other flowers most frequently seen, besides the usual stock of Carnations and Roses.

Last year Professor Greene, of the University of Minnesota, undertook some experiments at the request of the State Horticultural Society, to determine why Moore's Early Grape was so shy a bearer, as it was believed by many persons that this variety was more fruitful when furnished with foreign pollen than when dependent on its own. Paper bags were pinned carefully over the branches so as to include half a dozen clusters of these grapes before any of the flowers had opened, so

that no pollen of other varieties, whether conveyed by insects or the winds, could reach the flowers. The vines treated in this way set fruit perfectly, showing that Moore's Early has an abundance of pollen to fertilize the stigma under ordinary conditions. The perfect form of its fruit-clusters showed that scarcely a flower failed to produce a well-developed berry. Professor Greene thinks that Grapes, in which the blood of *Vitis labrusca* enters largely, have, as a rule, sufficient pollen, and that the failure of Moore's Early to fruit is caused by the lack of development of the bud from which the fruiting canes grow each year; and since these so-called fruit-buds are less abundant on this variety than on some others, it is advised in that region to prune this vine less closely than some others. In the same experiment it was shown that the Lindley and Brighton Grapes need to be fertilized with foreign pollen in order to be productive, and, therefore, they should be planted near some of the strong staminate kinds.

Alexander apples are the most costly apples now quoted in the regular market supplies. This large, red-striped fruit has a distinct flavor, and fancy grades bring \$3.00 a barrel at wholesale, while large selected apples from Michigan command as much as \$1.00 a dozen in the fancy-fruit stores. With the end of the season for peaches in sight, prices have advanced for all grades, and \$3.50 a basket is asked for choice lots of Morris White, Rarripe and Stump the World. Farmers in northern New Jersey, who grow late varieties mainly, have already been selling their peaches in the orchards, without sorting, at the rate of \$1.50 a basket. Exceptionally large and handsome quinces may now be had as low as seventy-five cents for a basket containing more than a half bushel. Even at such a reasonable price the fruit meets with very slow sale, proving clearly that its delicious flavor when baked and when used with apples for sauce is not generally known and appreciated. California fruit continues plentiful, the finest Tokay grapes of the season being included in forty-eight car-loads received here last week. The season for Mediterranean oranges is ended, and the last cargo of lemons is on the way from Naples. The scarcity of oranges has raised the price of Jamaica fruit to \$6.00 a barrel at wholesale, but as new-crop Florida oranges are already in our markets, there will soon be a plentiful supply. Some Florida lemons have also arrived. These lemons will be in more active demand in a few weeks when they are more fully matured and when large lots of inferior fruit from the Mediterranean have been disposed of. Some of these small and poor quality lemons, the late pickings from Mediterranean groves, have brought only five and ten cents a box, while the small supply of choice Sorrento and Majori lemons command from \$2.50 to \$5.50 a box.

A writer in *The Independent* states that in Georgia Water-melons are planted in hills fourteen feet apart, and from four to six melons are allowed to set on a vine. All these do not mature properly, so that a thousand marketable melons to the acre may be considered a large yield. These will make a car-load if they are of average size—that is, weighing from twenty to twenty-five pounds each. Early in the season the grower may realize \$125.00 net for a car-load at the point of shipment, but from this point the price runs down until they are sometimes sold out for the freight. Occasionally a grower will go into the refinements of cultivation and allow a vine to perfect only one fruit of some good variety, the others being removed as soon as they are set. Melons weighing sixty or seventy pounds have been grown this way, and easily marketed at \$1.00 each, even when there was a glut of the commoner fruit. The melon most commonly sent north is the handsome variety known as Kolb's Gem, which is a good shipper, owing to its heavy rind, and it is of good quality. Of much finer grain and flavor is the variety known as Rattlesnake, a melon of great length in proportion to its girth at the waist, and curiously and irregularly striped and mottled. In Chattanooga the name of a certain grower was found tagged to every Rattlesnake melon which he had sent, and in an overstocked market, with melons of the same variety selling for almost nothing, those labeled "Dean, Grower," were at once taken up by dealers and consumers at fair prices. There is an obvious moral to this little story. The Rattlesnake melon, having a thin rind, does not endure carriage to northern markets, although it is largely grown in Georgia for home use. When care is taken in packing a car, however, and the bottom courses are laid in such a manner as to break joints and distribute the weight of the top courses, the crushing of the lower ones is measurably avoided, and melons with a tender shell will carry safely. Melons too small to market, or those which are specked or rotted from contact with the ground, are usually fed to the hogs.

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Landscape Art and the Harlem Speedway.

WE have more than once referred to the extraordinary action of the Park Board, in this city, in giving out contracts for a driveway along two miles of the shore line of Manhattan Island, without consulting their own professional adviser, or any other artist of recognized skill in designing parks. Our readers have been informed that eminent artists, speaking for the associated architects, painters and sculptors of New York, and every newspaper which represents the cultivated public opinion of the city protested against this shameful waste of an opportunity to make a riverside parkway, which, in its beauty, availability and adaptedness to varied public use, would be one of the most valuable of the city's possessions. After many delays and much discussion, in which the commissioners have made it plain that they do not possess even an elementary idea that anything in the nature of design is essential to the proper development of a public pleasure-ground, they suddenly, at their last meeting, passed the following resolution:

Resolved, That this Board, at its next meeting, appoint a landscape-gardener for the speedway, and that all applicants file their testimonials with this Board in time for that meeting.

It was announced also that these applicants would be required to appear in person at the meetings of the committee.

It is charitable to assume that the Park Board is acting in good faith; that its members are really endeavoring to make tardy amends for their neglect to appoint a designer in the beginning, and for their refusal to accept the counsel of their own official designer. But if they imagine that they are complying with the spirit of the request made by the Municipal Art Society and others, and that they are disarming public criticism by doing the right thing now after so long a delay, their resolution shows an astounding ignorance of their duties as trusted custodians of the city's property and a boorish incapacity to appreciate the functions and responsibilities of a landscape-gardener in the broad sense of the term. This resolution proves that here are three

reputable citizens who cannot be made to understand that expert ability, taste and skill deserve some consideration, nor that an artist of training, experience and reputation in designing public parks ought to hold a different position as related to such works and to the officers who administer them from that occupied by a day laborer. What the people want, what the people have a right to demand, and what it is the business of the Park Board to supply is an artist of distinction whose name will stand as security that the work done for the city will be worthy of the city. If a new municipal building were to be constructed, even a park commissioner would admit that it might be well to entrust the work to an architect who stands in the front rank of his profession. No one but a park commissioner will contend that a rule equally rigid ought not to be observed in selecting a designer for a public pleasure-ground, which will cost much more money than a building, and be put to daily use by many more persons. Whether or not the men who will appear before the Board on Wednesday will be artists of the proper rank it is hardly necessary to inquire. It would be hard to imagine one of the leading architects in the country—say, one of those who aided in designing the buildings of the Columbian Exposition—standing, hat in hand, before the Park Board, presenting testimonials of his competency from his last employer, and replying to President Clausen as that official cross-questions him to find out how much he knows about architecture.

No doubt, there will be applicants enough for the place, and many of them may be worthy men, but the very fact that they appear as applicants will prove that they do not rank with the leading designers of parks in the country. Plenty of so-called landscape-gardeners can be found who will bring testimonials from some gentleman or lady to the effect that they know how to make lawns and plant shrubbery. But here is a picturesque river-front two miles long to be treated, and provision to be made for the population of the largest city on the continent who, will throng thither to witness some spectacle on the river or on the road. The place calls for a man who knows how to do something beyond the laying out of flower-beds. It is true, that contracts have already been given out, but the work will never satisfy the people of New York until these contracts are revised. No one can be trusted to meet the problems thus presented except an expert in designing public works of this character who can confidently assume the responsibility of rectifying mistakes, if any have been made. The city asks not only for a man whose reputation will be a guarantee of the best work, but for one whose self-respect will allow no interference within his special field.

Just at this point lies the consideration which makes this more than a local issue. Here is a fundamental rule which must be established, not only in this city, but in every city of the country, if our parks come up to the full measure of their usefulness and their beauty. A park commissioner has nothing to do with matters of design. He does not make profession of any skill to build a park, or a bridge, or a statue, or a monument, but it is his business to select men for technical work who have proved that they have this skill, and whose judgment should be treated with deference. No one would listen to the advice of Mr. Clausen or Mr. Strauss in relation to a parkway and its surroundings if this advice was opposed to the judgment of Mr. Olmsted or Mr. Vaux, who have furnished examples of park work that have never been excelled. Let us hope that there is no other city in the country where a resolution like the one we have quoted above could have been passed by a park board. But if there is such a city we may be sure that the park commissioners there appreciate neither their duties nor their privileges; that they have no conception of what can be accomplished by artists of genuine creative faculty; that they utterly lack that inbred and instinctive deference to trained and cultivated ability which is an unfailing mark of truly civilized society.

IT is difficult for persons who live in cities, or for those unfamiliar with the woods, to understand the magnitude of such a calamity as the forest-fires in Minnesota and Michigan last month. In a private letter, just received from the former state, the writer says, in alluding to the fires that were especially destructive on the first of September:

People who were not in this region at that time speak of the "Hinckley Fire," seeming to forget that everywhere throughout this state, Wisconsin and Michigan destructive conflagrations were raging at the same time. In explanation of the widespread character of the destruction, Mr. Ayres made a perfectly correct statement in your issue of September 12th when he said that throughout the entire wooded and inhabited region there was fire in nearly every section, that is, in nearly every square mile. I have been riding for two days behind a pair of good horses and have seen little else than blackened stumps, dead saplings and hardwood trees, and the prospect would be the same if I drove for two weeks in any direction from this point. In every little piece of unburned stump land little Pines are starting up, showing how valuable the land would be for the growth of timber but for the liability to fire. On many of the uncut tracts it is hard to start a forest-fire, but the woods have been cut over so rapidly that I can hardly realize that this is the same country through which I passed five years ago. Yet, in spite of all these lessons, and of all that has been said and written on the subject, there are many men living in the woods who are actually ignorant of the fact that there is any law against setting fire to them.

The White Ash.

SOME thirty species of *Fraxinus* are now recognized, a dozen of them belonging to eastern Asia, and others having their homes in central Asia, in the Himalayas, in the Orient, in northern Africa and in Europe. North America contains about as many species of Ash as all the rest of the world put together, and they are found from Cuba to the extreme north and from ocean to ocean, although the forests of the eastern part of the continent are the richest in species.

The White Ash, *Fraxinus Americana*, is easily the noblest of the American species, one of the most beautiful of our native trees and one of the most valuable timber-trees of eastern North America. It is common in all the forests as far north as Minnesota and Nova Scotia and as far south as northern Florida and Mississippi, and ranges westward to the Trinity River, Texas, the Indian Territory and Nebraska. It is usually found in rather moist soil, although it does not delight in cold swamps and the low wet banks of streams and lakes, like the Black Ash, *F. niger*. It grows to its largest size in rich bottom-lands, and is at its best in the basin of the lower Ohio. In the forest it sends up a perfectly straight and slender stem to a great height, and ash-poles not over a foot in diameter and a hundred feet high were often raised as flagstaves in the campaign when Henry Clay was a Presidential candidate. A full-grown White Ash is occasionally 125 feet high, with a tall columnar trunk six feet in diameter. The grain of the wood is straight, and it is always selected by farmers for a flail-staff or other implement which must be at once light and strong. It is now largely used for making tool-handles, for oars and for the interior finish of buildings, and especially for agricultural implements.

In the open ground the White Ash broadens out into a round-headed tree, though with a height considerably greater than its diameter. The bark of the trunk, which is marked by deep narrow furrows, is dark gray; the dense foliage is a deep, clear green, and in the autumn it turns to a rich chocolate-brown or olive-purple, and sometimes to a pure yellow; in winter the graceful poise of its branches and light, lustrous, bloom-covered branchlets make it attractive still; it grows rapidly, and attracts few destructive insects or fungi, and, altogether, is one of the very best of our native trees for ornamental planting. It is one of the latest of our trees to come into leaf in spring, and while this detracts somewhat from its value as a park-tree, it is a real advantage in trees used for roadside plant-

ing, for in our cold wet springs it is not desirable to have any of the sunshine excluded from water-soaked roadways. The European Ash, *Fraxinus excelsior*, is also a tree which comes late into leaf. This is probably the tree referred to by Tennyson in the well-known lines:

Why lingereth she to clothe her heart with love,
Delaying as the tender Ash delays
To clothe herself, when all the woods are green?

and yet when our White Ash is planted with *F. excelsior* on the high regions of central Europe it comes into leaf still later than that species, and for this reason it is considered better for forest-planting, since it escapes the late spring frosts, which often destroy the young shoots of the European tree. In forest-planting on the prairies the White Ash grows more slowly, and is less able to resist the droughts than the Green Ash, a variety of *Fraxinus Pennsylvanica*, which extends westward to the eastern ranges of the Rocky Mountains, Wasach range of Utah and the mountains of eastern Arizona.

The illustration on page 405 is from a photograph taken by Professor J. T. Rothrock of a tree in Chester County, Pennsylvania. It represents, to a certain degree, the woodland form of the White Ash, since the specimen was well grown before the land about it was cleared away, although, undoubtedly, the head is now much broader than it would be if the surrounding trees had not been felled many years ago. The trunk is now fifteen feet ten inches in circumference at four feet above the ground.

Horticulture in Kern Valley, California.

A FEW days ago I visited what is known as the Kern Valley, a portion of the great San Joaquin country, and yet set apart from that by a low watershed and by many physical peculiarities. It is a very remarkable region, the delta of two great rivers, vast sand plains, vast islands of swamps and Willows, vast levels as yet hardly cultivated; everywhere, in the midst of these, are immense orchards, vineyards, fields of Alfalfa and other crops. Four hundred thousand acres hereabout are practically under one management, and this simple fact may be taken to mark the scale upon which matters are carried on in the San Joaquin country.

The homesteads in this district belong, in many cases, to the old plantation type of the better southern classes in the days before the war. One finds areas of six thousand or eight thousand acres, with stately mansions, amid tall, semi-tropic growths of trees and vines. Fields one sees of a thousand acres, and the herds of cattle and horses seem countless. Around such mansions are deer parks, aviaries, broad lawns, swimming-ponds, wide water-ditches full of exotic water-plants. The offices, workshops and men's quarters accommodate a hundred or more employees. The owners spend much of the year elsewhere, but sometimes they come with hosts of friends and live right royally.

From the economic standpoint, these great plantations are of little importance compared with the multitude of small colony homesteads being established in the richer and more accessible lands. Rivers of water are at the disposal of settlers, and the sandy soil admits of subirrigation to an extent that I have seldom witnessed elsewhere. The rapid growth of vegetables of every description and of vines and trees, under these circumstances, is hardly believable, even to a Californian well used to many of the possibilities of his own country. There is an experiment garden at Bakersfield under private management. Here I saw hills of peanuts, each grown from a single kernel, planted June 2d, that averaged four feet across. I saw in August Lima Beans, the second crop on the same soil—that is, there had been Lima Beans planted and grown to maturity, and the ripe beans were then planted alongside the old hills, and were also brought to maturity, all since the spring frosts. I saw taller Corn, Cotton, Okra, Jerusalem Artichokes and many other crops than I have ever seen in any part of the United States.

Everywhere in this noble land there is lavishness, surplus and unmeasured overflow of energies. Men plant on a scale as vast as the valley in which they work. They put down cuttings of Lombardy Poplars along miles of roadways, and in four years are cutting firewood; fifty-acre orchards of one kind of Peach or Pear are seen; 500 acres of Raisin Grapes; miles of avenues, along which rise Palms, huge and columnar, feather-crowned, oriental.

A few notes made by me August 17th will, perhaps, serve to illustrate the soil and climate:

Sweet-potatoes planted in the open ground, June 5th, covered the ground with matted vines. Seed of Japanese Hemp was sown in the open ground June 1st. In sixty days it was over eleven feet high, without branches, in the best condition of fibre; it grew twenty-nine inches in the first twenty-nine days; it grew five inches in the twenty-four hours ending July 2d. Abutilon Avencennæ and Hibiscus esculenta grew after a similar fashion.

All the Cucurbitaceæ flourish as they do in the delta of the Nile. Gourds, Melons, Cucumbers, Squashes soon run wild and become a part of the host of the enemy. An arbor of Muskmelons was a feature of one farmstead I visited.

The rapid growth of vegetables here is leading to careful experiments with drying and packing tomatoes, carrots, beets, parsnips, sweet-potatoes, okra and many other vegetables. Capitalists are becoming interested, and after further experiments will introduce California dried vegetables on a large scale, at first for army and navy use, then for the general market. It is held that the soil and climate offer especial advantages for this industry, because the crop produced per acre is much greater than elsewhere. This seems true of many annual crops, such as Okra, and the development of the industry ought to be rapid.

As I have hinted, this land is one of immense weeds as well as of wonderful horticulture. In fact, one large district was long known as "the weed patch," because giant Malvaceæ, Compositæ, Thistles, Nettles and Brambles made it dreaded by the easy-going pioneers, and they shrank from attacking it. In these subirrigated fields the soil is warm clear through, and is moist three inches below the surface. The weed-seeds ripen, fall and grow immediately, to continue the process indefinitely. Nothing is really more beautiful in all these green and waving lowlands than the occasional wastes islanded in Willows and Cottonwoods along the wide rivers. Here purple and gold flame over shining acres, and no less splendid than the acres of Egyptian Corn and Sorghum are the fields of heavy-fruited vines.

On the older farms there are some very attractive bits of gardening, chiefly for color. The southern Bignonias, Hibiscuses, Crape Myrtles, and especially Oleanders, give the key-note to many a lawn. Winter frosts limit the range of semi-tropic vegetation, but there is enough that is suitable to the district. The Fig, the Vine, the Olive and the Pomegranate are seen everywhere, but the winters are rather cold for the Orange and Lemon, though one finds some old trees. The true citrus districts of Kern Valley, as of the whole San Joaquin, are nearer the foot-hills.

Niles, Calif.

Charles Howard Shinn.

Native Trees and Shrubs about Montreal, Canada.—III.

CORNUS STOLONIFERA, the Red-osier or Red-stemmed Dogwood or Cornel, is, perhaps, the most common species of its genus in some localities in this region. The colors of the stems vary from deep red, or almost blood-red, to light greenish yellow on different individuals, but are usually dark. The ripe white fruits and flowers are often found on the same plant in August. This species seems so like what is called the *Cornus alba*, L., of Siberia, that our botanists may yet come to consider one as merely a geographical variation of the other. Forms of our native species have quite as showy stems as the imported kind. *C. Baileyi*, Coulter & Eyans, distinguished and separated

from *C. stolonifera* a few years ago, is, so far as I have seen, so like the latter in many characters, that its specific identity seems questionable at least, especially if the Siberian forms are also taken into consideration. Specimens of *C. stolonifera*, collected at random at Chateauguay and submitted to one of the authorities, were pronounced as "a form of *C. Baileyi*, which looks strongly toward *C. stolonifera*, between which two species there are some hazy forms. All it lacks to be good *C. Baileyi* is that the lower leaf-surfaces are not woolly." *C. paniculata*, the panicle-dogwood, is common in localities. *C. alternifolia*, or alternate-leaved Cornel, is frequently seen. *C. sericea*, the Silky Cornel, is abundant, especially in damp places along roadsides and borders of fields. This is another very variable species as now considered. The plants in this region and in northern Vermont, among other superficial differences, have leaves distinctly narrower and paler on the lower surface, when compared with those growing in southern New England. *C. circinata*, the round-leaved Cornel, is not rare.

Sambucus racemosa, the early red-berried Elder, which also bears the name of Stinking Elder in the Adirondacks, is common, and the fruit is a favorite food of birds. *S. Canadensis*, the common Elder, known as the Sweet Elder in the Adirondacks, is plentiful, generally on low ground. Its broad clusters of white flowers begin to be showy about the time the bright red fruit of the preceding species is ripe.

Viburnum lantanoides, the Hobble-bush, or American Wayfaring-tree, the latter name being rarely applied, although given in the botanies, is plentiful in cool woods, particularly where the soil is rocky. In its native habitat it is a beautiful shrub in flower, fruit and leaf, but it is rarely cultivated with success and satisfaction. In some forests it forms almost the only undershrub. Locally it sometimes gets the name of Moosewood, and in the Adirondack Mountains the guides commonly call it "Witch-Hopple," although Dogwood is a name sometimes applied. *V. opulus*, the High-bush Cranberry, is common on rocky moist soils and on rocky islands in the river. The bright red-colored fruit is sometimes used as a substitute for the true Cranberries, which do not grow here. *V. acerifolium*, the Maple-leaved Viburnum, is common. *V. dentatum*, called Arrow-wood, is commonly found growing in similar situations as the silky Cornel and the next species. *V. cassinoides*, Withe-rod, is common in many localities. *V. Lentago*, the Sheep-berry or Sweet Viburnum, bears a number of local names. It attains to small tree form, and the fruit, when dead ripe, or after it has been touched with frost, is considered very palatable by many of the inhabitants.

Symphoricarpos racemosus, the Snowberry, grows apparently wild at Chateauguay, but I am uncertain whether it is native or has been transplanted from some other locality.

Lonicera hirsuta, the Hairy Honeysuckle, or what appears to be this species, is rarely found on the south side of the St. Lawrence. *L. glauca* is common, and is sometimes transplanted into gardens. *L. oblongifolia* is very rarely found in swampy woods near the river. *L. ciliata*, the Fly Honeysuckle, is often found in woods, most commonly on decaying logs or stumps.

Diervilla trifida, our rather insignificant representative of the showy Japanese Weigelas, is quite common in some localities, especially on sandy or gravelly banks or borders of streams.

Cephalanthus occidentalis, the Button-bush, is abundant in swamps and along the muddy margins of ponds and sluggish streams and ditches.

As already stated, plants belonging to the family of Heaths or Ericaceæ are rarities in the immediate vicinity of Montreal, although abundant in localities not far away, or within an hour's ride by rail. Occasionally plants may be found along the shores of the St. Lawrence in sandy spots. In such a situation I once found *Vaccinium corymbosum* on the Nun's Island, at the mouth of the Chateauguay River, but it was afterward destroyed. The fruits of several species of *Vaccinium* of the Blueberry group are commonly called "Bluets" by the French Canadians. Of

the various species probably *V. Canadense* yields the largest proportion of the enormous quantities of berries which are annually brought to the markets. *Kalmia latifolia* has been reported as found within fifty miles to the south-east of Montreal.

Fraxinus Americana, the American or White Ash, is a very common tree. *F. pubescens*, the Red or Downy Ash, is quite common in some localities. It is sometimes called "Frêne gras" (Fat Ash or Greasy Ash) by the French Canadians because the wood burns easily when quite green and newly cut, this peculiarity not being true of the White Ash. *F. viridis*, the Green Ash, is no longer recognized as a distinct species in Professor Sargent's *Silva of North America*. It occurs in this region, but there are many intermediate trees to be found which seem to carry the species into *F. pubescens*, as it is impossible to tell to which type they belong. *F. sambucifolia*, the Black Ash, is also known as "Frêne gras" by the habitants. It is a common tree in swamps or low grounds or moist rocky places, and grows much larger than *F. pubescens*. Good straight stems are in demand by the Indians and others for making baskets, hoops, etc.; the wood, with a little manipulation, readily splitting into thin sheets along the line of each annual layer or ring of growth.

Dirca palustris, the Leather-wood, sometimes called Moose-wood, and the "Bois de plomb" of the French Canadians, is frequently found in woods on warm rocky soils. These little shrubs are often stripped of their extremely tough pliant bark, which finds many uses.

Arnold Arboretum.

J. G. Jack.

Foreign Correspondence.

London Letter.

RUDBECKIA NITIDA.—I saw this plant for the first time in the Botanic Gardens at Oxford a few days ago, under the name of *R. columnaris*, and, so far as I can make out, it has never before been in cultivation in England. In my opinion it is one of the most beautiful of all *Rudbeckias*. In the Oxford gardens it was about a yard high, with leathery oblong-lanceolate leaves about six inches long, with a long petiole, except those on the stem, which were sessile. The flower-heads were borne singly on slender naked peduncles, and each head measured eight inches across when flattened out. The dozen or so bright yellow ray-florets droop gracefully around the conical dark brown disks. I see that *R. nitida* is a native of Texas, Florida, Georgia and Louisiana, and that it is placed next to *R. maxima*, one of our commonest garden-plants, by Torrey & Gray. The true *R. columnaris* has pinnatifid leaves and small flower-heads, and is as poor, in a garden sense, as *R. nitida* is superior.

HELIANTHUS DEBILIS.—This plant, one of the most attractive border-plants at Kew this year, is also called *H. cucumerifolius*, under which name it is described in Torrey & Gray's *Flora of North America*, where it is said to be a native of Florida, Louisiana and Texas. It is a new plant in English gardens, and is likely to become a favorite now its decorative value is revealed. At Kew it grows to a height of about five feet, forming a bush clothed with heart-shaped, stalked leaves, which are scabrid on both sides and toothed along the margins. The flower-heads are borne singly on long erect naked peduncles, each head being three inches across, the spreading oblong-concave ray-florets being bright deep yellow, darkening to orange at the base, while the disk-florets form a black-brown, button-like centre an inch across. The plant appears to be an annual. It is first-class in every sense.

[*Helianthus cucumerifolius* is well known in American gardens as one of our best annual Sunflowers.—Ed.]

SENECIO HUALTATA.—This is a handsome plant of large growth, which has been introduced to Kew by means of seeds sent four years ago from Tucuman. It has proved hardy here, having stood several winters out-of-doors, and

it flowered a few weeks ago for the first time. It has a perennial root-stock, from which spring numerous large ovate cordate leaves on long stalks, forming a cluster suggestive of a big Dock. The flower-stems are five feet high, branched, the branches bearing clusters of flowers an inch across, with creamy white ray-florets and an orange-yellow disk. The decorative value of the plant is almost equal to that of the giant *S. sagittifolia* which Monsieur André introduced from Montevideo two years ago, and which flowered at Kew last year and again this. A figure of *S. Hualtata* will shortly be published in the *Botanical Magazine*.

NERINE APPENDICULATA.—This new species has flowers of extraordinary formation. Mr. Baker describes it this week in the *Gardeners' Chronicle*, from material supplied by Mr. J. O'Brien, who introduced it from Natal; he says it has a floral structure suggestive of *Narcissi*. In general characters it is near *Nerine flexuosa*, under which it is now included *N. angustifolia pulchella*, etc., but it differs in having a ring of strap-shaped processes which spring from the outside bases of the stamens, forming a kind of inner cup or corona. The flowers are red. Similar but smaller appendages to the stamens are found in the very distinct *N. pancratioides*, which Mr. Baker described three years ago, and which was also imported from Natal by Mr. O'Brien. This species, however, has white flowers and is nearly allied to *N. pudica*. The *Nerines* are very useful plants for the greenhouse, and every new addition is most welcome. Hybridists will, no doubt, look sharply after *N. appendiculata*.

BRUNSVIGIA JOSEPHINÆ.—If we could induce this plant to bloom every year it would take rank with the most select of south African bulbous plants. Under cultivation in this country, however, it rarely flowers, consequently it is rarely grown. In some parts of south Africa it is most abundant on the open sandy plains, its large heads of red flowers standing erect among the short scrub, and when withered rolling about in the wind like gigantic Dandelion-heads. There is a plant of it in bloom now in the Cape-house at Kew. It has a bulb about four inches in diameter and a stout semi-terete scape a foot high bearing an umbel of fourteen flowers, each flower being borne on a stiff pedicel nine inches long, the flower itself being three inches long, and in shape and color suggesting the *Jacobæa Lily* (*Sprekelia*). Sometimes there are fifty or sixty flowers in an umbel, according to Baker. The whole inflorescence is very suggestive of an elaborate chandelier.

CYANASTRUM CORDIFOLIUM.—This is the sole representative of a new genus of *Hæmodoraceæ*, founded by Professor Oliver three years ago on a plant discovered in Lagos, west tropical Africa, and figured and described in Hooker's *Icones Plantarum*, t. 1965, where the Professor recommended it as a likely garden-plant for tropical collections. It is now flowering for the first time in one of the stoves at Kew, and although not likely to please growers generally, it is, nevertheless, worth including in choice or botanical collections. It has a creeping root-stock from which spring leaves nine inches high, on erect peduncles eight inches long, the blade six inches long, deeply heart-shaped and colored shining green, of two shades. The flowers, which are purple, are borne on short erect scapes and are an inch across, star-shaped, with six segments.

GERARDIAS.—I have seen several species of this North American genus of *Scrophulariaceæ* tried in gardens here, but they have always proved unsatisfactory—no doubt, for the reason stated recently on page 367. The best results have been obtained with *G. quercifolia*, which belongs to the *Dasystorna* section of the genus, and which is sometimes happy in English gardens. It is in flower now in Mr. Smith's nursery at Newry, where it is over two feet high and has charming butter-yellow flowers two and a half inches long. This species was introduced about eighty years ago. The beautiful *Harveyas*, *Cyniums* and *Buttonias*, which are natives of south Africa, and some of the Indian species of *Pedicularis* have also been tried in English gardens, but they come to nothing. Our only chance,

I suppose, is to let them have their host plants, but here the difficulty arises, what the host is being often hypothetical.

PTERIS LONGIFOLIA, var. *MARIESI*.—This is a very elegant variety of one of the commonest and most useful of garden Ferns. It has been introduced by Messrs. J. Veitch & Sons, who have exhibited it several times this year, and it has been awarded several certificates. It differs from the type in having the pinnæ very narrow and closer together; this gives the fronds a much more elegant and pleasing appear-

remarkable Fern have lately been received at Kew from Mr. Curtis, of Malacca, and they are now likely to become established in cultivation for the first time, I believe. The genus was merged in *Polypodium* by Hooker & Baker in their *Synopsis Filicum*, but it has since been restored by Mr. Baker, who places it next to *Dicksonia* and *Diparia*. Five species have been described, all natives of Malasia. They are remarkable in having a thick, shapeless rhizome, which clings to the branches of trees and in time forms a thick crust around the branch, one specimen at Kew hav-



Fig. 64.—White Ash (*Fraxinus Americana*) in Pennsylvania.—See page 402.

ance than the ordinary *P. longifolia* has. In all other respects it is like the latter, growing just as freely and rapidly under ordinary conditions. *P. longifolia* is a weed in most ferneries. At Kew it sows itself on brick walls, under stages, in fact, anywhere where the spores can find lodgement, and the plants grow sturdily with no further sustenance than the moisture and what can be got from bricks and mortar. If the new variety will be as accommodating it is certain to be welcomed by all owners of greenhouses.

LECANOPTERIS CARNOSA.—Fine living examples of this very

ing a crust six inches thick entirely surrounding a piece of tree branch. These rhizomes grow over each other, and they are glaucous green when young, brown-black when old, and covered with mammi-like projections, which mark the points where the pinnate fronds were attached. The old rhizome is of leathery texture, and it is galleried inside like the myrmecophilous *Hydnophytums* and *Myrmecodias* which inhabit the same region. Mr. Curtis suggests that the ants are probably necessary to the welfare of the plant, as every specimen he found was the abode of my-

riads of these little creatures. The same theory was held with regard to the Myrmecodias, etc., but this was exploded by the behavior of plants at Kew, which not only grew well without the assistance of ants, but ripened seeds from which plants were raised which formed the fleshy galleried stems, although no ant ever came near them. The appearance of the *Lecanopteris* is as if the rhizome had been poured on the branch in a plastic condition and thus formed a thick irregular crust all round it. There is no Fern with anything like the same kind of rhizome, and it is of the greatest interest to botanists. The pinnate fronds are of about the same size and texture as the fronds of the common *Polypodium vulgare*.

London.

W. Watson.

Plant Notes.

CARYOPTERIS MASTACANTHUS.—This low, late-flowering shrub is not common in gardens—in American gardens, at least—although it was discovered long ago by Robert Fortune in China, and introduced into European gardens by Veitch & Sons. In the first volume of *GARDEN AND FOREST* Herr Max Leichtlin spoke of it as hardy with him, and in a dry sunny position as far north as Boston it will survive ordinary winters. It is a much-branched shrub, resembling somewhat a *Ceanothus* in look, and its great value consists in its habit of blooming so late and so profusely. Even where the extremities are winter-killed, a great part of the wood will survive, and, as it flowers on the new wood, it will throw up branches which will bear abundant flowers all through the month of September and until heavy frosts. Its large clusters of lilac-blue flowers are borne in axils of the leaves, and although they are individually small, the corymbs are sufficiently large and abundant to be quite conspicuous. The flowers are slightly fragrant, and the green leaves, hoary white on the under side, give out a strong aromatic odor when bruised. Even where the winter is cold enough to make it advisable to lift the plant and place it in a pit, to be kept over until spring, it is sufficiently striking and distinct to warrant this trouble. It is so easily grown from cuttings that it ought soon to become common.

POLYGONUM AMPLEXICAULE, var. OXYPHYLLUM.—Some of the *Polygonums* from eastern Asia, like the Japanese *P. cuspidatum*, and *P. Sachaliense*, from Saghalien, are pretty well known as strong-growing perennials which can be used in parks and other places where large masses of foliage are needed, and there are others from northern India, with red, pink and rose-colored flowers, which make interesting autumn-blooming plants for rock-work. This Knotweed, which was introduced into American gardens some years ago under the name of the Mountain Fleecy, comes from the Himalayas, and is perfectly hardy. It grows four or five feet high, and bears at the summit of each stalk a large open raceme of small white flowers, which have a delicate fragrance. The foliage of the plant suggests rather unpleasantly our wild Smartweed; although it is rather tropical in appearance. The general aspect of the plant, however, is not coarse, especially in early autumn, when it is crowned by its masses of fleecy flowers. It is not at all particular as to soil or exposure, and will flourish almost under any circumstances.

ACONITUM AUTUMNALE.—We have often called attention to this Monkshood as one of the first-rate herbaceous perennials that flower at this late season. It grows to a height of some three feet, is well furnished with glossy foliage, and bears at the summit branching spikes of very dark blue flowers which last a long time. It is worth saying again, that since this plant blooms at the same time with the White Japanese Anemone, a very pleasing combination can be made of the two. This year, in spite of the dry weather, plants which were not watered at all are showing their beautiful hooded flowers of full size, and they are not only attractive in the border, but useful for cutting. *Aconitum autumnale*, the name under which it is generally known, is easily multiplied by dividing

the roots. Those who have tried sowing the seed as soon as it ripens on plants grown here have found that it germinates much more surely and quickly than imported seed.

Cultural Department.

Autumn-flowering Perennial Plants.—I.

OUR gardens and shrubberies would be much less attractive in the autumn if it was not for the large number of species belonging to the great family of *Compositæ* which are now in bloom. The predominant shades of color in the flowers of this family are yellow, blue and purple, and at this season the herbaceous border glows with these rich tints. The perennial Sunflowers form a most important group of autumn-flowering plants, and are indispensable for large borders and shrubberies. Many of them are tall and graceful, blooming profusely, and their flowers are especially useful for cutting. They will grow in almost any soil or situation, but to have them in perfection they should be taken up and replanted every second or third year into good soil which is well-manured, as they are gross feeders. We often hear it argued in favor of herbaceous perennials that when once set they need no further attention, but will flourish and bloom and grow better and better for years to come. This lazy notion should be dismissed at once. No flower-garden gives satisfaction unless it is carefully attended to, and hardy perennial plants furnish no exception to the general rule.

The following species and varieties are suitable for borders and planting among shrubs. *Helianthus multiflorus plenus*, the double Sunflower, grows from four to five feet high, and produces from June to October large double yellow flowers, which are excellent for cutting. *H. multiflorus maximus* is a tall-growing variety with very large flowers, nearly as large as those of the well-known annual garden forms. *H. rigidus* spreads quickly and requires plenty of room. It has golden-yellow flowers, and grows about four feet high. *H. mollis* is a showy species with woolly leaves and pretty yellow flowers. It is a neat plant, growing from four to five feet high, and is worth a place among the most select perennials. *H. orgyalis* is a distinct species, which attains a height of eight or ten feet; it has graceful lanceolate leaves and numerous small flowers, which are very showy. *H. giganteus* is another tall, graceful plant, and *H. Maximiliani*, one of the latest to bloom, is also one of the best. Its flowers are a pure golden-yellow, and it is a large handsome plant. *H. strumosus*, *H. doronicoides*, *H. trachelifolius*, *H. grosse-serratus*, *H. tomentosus*, *H. decapetalus* and *H. lævigatus* are all desirable, and each has special points of merit.

The autumn-blooming Sneezeweed, *Helenium autumnale*, is a showy, vigorous perennial, about five feet high, and its yellow flowers, often borne in corymbs, last for a long time. *H. autumnale pumilum* is a desirable dwarf variety with compact habit, and grows about two feet high.

Although our fields and thickets are adorned with Golden-rods at this season, yet there are several which are distinct and showy, and worth a place in our gardens. *Solidago rigida*, simple unbranched stem; *S. speciosa*, crowned with its large pyramidal masses of flowers; *S. petiolaris*, with its wand-like panicle, and *S. Drummondii* are especially desirable; and perhaps the last, a south-western form, is excelled by none when carefully grown.

The *Boltonias* are tall autumn-flowering plants, resembling very much our native *Asters*, the principal difference being in the character of the appendix to the fruit or pappus. They bloom profusely through August, September and October. *B. glastifolia*, a form of *B. asteroides*, is the first to bloom here; both plants are grown here side by side, and they look very much alike. The principal difference, from the horticultural point of view, is that *B. asteroides* blooms about a month later. *B. asteroides* has stout stems six to seven feet high, and covered with entire lanceolate leaves. The heads are over an inch in diameter, and the ray-flowers are of a whitish color. *B. latisquama* is a splendid border-plant for back rows, and when planted in large clumps is very effective. A few days ago I saw a bed of this plant sixty feet long by six wide at the Shady Hill Nurseries, Bedford, Massachusetts. The plants were completely covered with flowers, and it was a sight not soon to be forgotten. This plant has stout thick stems, which ordinarily grow about four feet high, but much taller under special care. The showy heads are produced very plentifully, and are about two inches across, and the ray-flowers are of a violet-blue color.

The native *Asters*, although they are so common, at this

time are, without doubt, the most showy of our late flowers in the garden. They should be more plentifully seen in our gardens, as they come into bloom so late that they help to draw the autumn and spring together. Some seasons we have plants of *Aster Shortii* in bloom here in November. Asters are effective either in masses or as single plants in our borders. They like good cultivation and should be taken up and replanted every second or third year. During the summer months they should have a liberal supply of water; if they get dry at the roots they lose their lower leaves and, of course, are not nearly as handsome as when clothed with healthy foliage down to the ground. A few of the best species for garden decoration are *A. spectabilis*, *A. patens*, *A. laevis*, *A. surculosus*, *A. Novi-Belgii*, var. *levigatus*, *A. Novæ-Angliæ* and its varieties, *A. sericeus*, with leaves covered with a silky white pubescence, *A. turbinellus*, *A. Shortii*, with its bright blue flowers and ample leaves, and *A. Chapmani*. A good late oriental species is *A. Tartaricus*, which throws up its tall stems to a height of six or seven feet, carrying immense loose panicles of large purplish blue flowers. The plants vary in size and habit, from low compact growths to tall and stately forms eight feet high, and their flowers range in color from pure white to violet, lilac, blue and purple. Many of them have been carefully described and figured in former volumes of GARDEN AND FOREST.

Just now the *Vernonias*, or Iron-weeds, are conspicuous with their large purplish flower-heads. They are tall, stout perennials, from six to seven feet high, and are in flower from the end of August to the middle of October. These showy species, that give satisfaction here as garden-plants, and which are much admired but seldom seen in collections of hardy plants, are *V. altissima*, *V. noveboracensis* and *V. Arkansana*. *Vernonias* thrive in rich light soil, and are increased either by seeds, cuttings or division in spring or autumn.

The Mist-flower, *Eupatorium cœlestinum*, does well here in a sheltered position. It is a low perennial about two feet high, and the heads are produced in compact cymes and are of a bluish color.

Pyrethrum uliginosum is a noble plant, five to six feet high and crowned with large white flowers, which are excellent for cutting. It should have a sheltered position and be planted in deep moist soil.

Senecio pulcher, one of the handsomest of the Groundsels, has large showy, rosy-purple flowers, which are about three inches across. It has stout stems three feet high, with thick fleshy leaves. It is not quite hardy here and requires slight protection in the winter, and is increased by root-cuttings in the spring.

Gaillardia grandiflora is now making a fine display of flowers. The plants are from seed sown in the spring.

Botanic Garden, Harvard University.

Robert Cameron.

Orchid Notes.

Epidendrum Godseffianum.—This is the newest addition to the genus *Epidendrum* which has been brought into cultivation, and it is named in honor of the manager of the great establishment at St. Albans, from which so many fine things have been distributed. The plant came in with large importations of *Cattleya labiata*, and from this it is safe to assume that the treatment adapted to this *Cattleya* should also suit the *Epidendrum*, and so it has proved with us here. *Epidendrum* are the oldest of known Epiphytes, and at the beginning all such were called *Epidendrums* by Linnæus, but, as material came in, it soon became evident that a division was necessary, for even *Dendrobiums* were included, until at least nine species were known to science at the time the name was given by Swartz, himself a pupil of Linnæus. *Epidendrums*, as a class, are not much in favor with cultivators, there being but few that are showy enough to meet the popular demand at the present time, and it is to be feared that *E. Godseffianum* will not be much sought after, unless the fashion changes. The flowers, about an inch in diameter, are produced sparingly on long branching stems, and all their parts are of a pale olive green, except the lip, which is white, faintly lined with purple. This *Epidendrum* is a very free grower when placed on blocks, with a little moss to hold the moisture about the roots. It is not easy to place the plants in pots as the bulbs have a habit of ascending as they grow each year one above another, evidently on trees in their native country, Brazil.

Lælia præstans.—Last fall we received a number of small pieces, newly imported, of this dwarf-growing *Lælia*, and as they seemed to possess but little vigor they were all pegged on to a piece of Fern-root, hung up in the cool house and left to

take their chance. All that was done was to spray them occasionally with the hose; they started at once, remaining in the cool house until a little heat was necessary to complete growth in the middle of winter, when they were removed to the *Cattleya* house until spring. Then a new growth commenced, and this is now producing a number of flowers, many of the bulbs having two-flowered scapes, and others one each. They are still in the cool house, but will be removed after flowering, to complete their growth and ripen. *Lælia præstans* belongs to the *L. pumila* section, of which it and *L. Dayana* are regarded as being mere varieties. *L. Dayana* flowers a few weeks sooner than *L. præstans*, the flowers are smaller, the lip is richer in color and they both thrive under the same treatment, that is, a cool house in summer and a little more warmth in winter. It is a pity that *L. præstans* is not more common in collections; it has always been rare in a cultivated state, but is, perhaps, more often seen in this country than in Europe. The flowers are very large in comparison to the size of the plant itself, the leaf and bulb do not exceed four inches in length, while the flowers are over three inches across, round in outline, owing to the breadth of the bright rose-colored sepals, while the lip is a rich purple in front. It is worthy of remark that the plants have thriven on the block of Fern-root far better than if they had been put in small pans or pots, where, in hot weather, the trouble of keeping them watered is considerable. The roots have penetrated a mass six inches in thickness, and are fast appearing all over the block.

Dendrobium Phalænopsis Schroederianum.—There is little danger of noting too often or commending too highly this plant, with its free growth and flowers of varied and beautiful coloring, ranging from rich dark purple to the most delicate tint of pink, and produced on long and gracefully arching sprays. We now have more than fifty plants just coming into bloom, and the growth made this past season is of the kind to make glad the heart of the cultivator, for it is a great deal stronger this season than last. Old bulbs that flowered several years ago are now pushing flower-spikes again, even though they have traveled more than half round the world. It is quite a common occurrence for young plants to be produced from the upper parts of the old bulbs, and these can be taken off when matured, and if potted in small pots or pans and suspended in a warm house they soon make good flowering plants. We have many that were taken off last spring, and all are now about to bloom; for this reason it is safe to say that this *Dendrobium* will never be lost to cultivation. The smallest-sized pans are the best to grow the plants in, as we have found that if the material becomes the least sour or overwatered the young growths soon rot off in dull weather in summer. It is risky to water them overhead in the growing season for this same reason, except in the morning of a very hot day, when quick evaporation is assured. *D. Phalænopsis* is essentially a warm-house plant, and those who do not have a house that can be kept at a minimum of sixty degrees in winter had better not try many, or loss may occur. It is best to suspend the plants to the roof where the air is more buoyant, and the snails are then easily kept away from the roots; wood lice should also be looked after in the flowering season, as we find that they sometimes eat the blossoms themselves.

South Lancaster, Mass.

E. O. Orpet.

Forcing Tomatoes.

NOW is a good time to sow seed for a succession crop of tomatoes, so that the plants may be well under way before the days become too dull and dark. Some growers still adhere to the practice of striking cuttings in place of growing plants from seed, but the seedlings are no more trouble and are in many ways preferable. The plants when large enough should be pricked singly into three-inch pots, and again into five-inch pots as they require it, using a compost of three-fourths fibrous loam and one part leaf-mold and pulverized sheep-manure in equal portions. They should have a light airy position and be placed well up to the glass to prevent them becoming drawn. They may be fruited in pots or boxes or in a bed, but boxes are preferable, and will in most cases be found the most convenient. A very suitable and easily handled size is eighteen inches long by twelve inches wide and nine inches deep, which gives ample room for two plants. The boxes should be filled only two-thirds of their depth at first, the other space being left for a top-dressing as the plants require it. They must be carefully and regularly watered, and there will be no necessity for giving liquid-manure until after the fruit is set, when they may have a weak solution applied about twice a week.

The plants should be trained to a single stem, all side shoots

being pinched off as they appear. Half the leaf is sometimes cut off, but this is not advantageous unless the plants are overcrowded. The height of the plants must be regulated by the convenience of the house, but after four or five clusters of fruit have set they will in most cases be high enough, and the points should then be pinched out, and all lateral growths carefully removed, to concentrate the vitality of the plant upon the work of maturing the fruit. Sometimes the fruit will set naturally, but it is always safest to resort to artificial pollination.

A light well-ventilated house, with a medium supply of bottom heat, where a temperature of sixty degrees can be maintained at night is most suitable. On bright days the thermometer may run up to eighty degrees, but every advantage should be taken to admit fresh air. As to varieties, there are several adapted for forcing, but for a good reliable variety the Lorillard is still the best all-round forcing Tomato at command.

Tarrytown, N. Y.

William Scott.

Chrysanthemums.

THE earliest Chrysanthemum blooms are now open, and the time between now and the end of November will be full of interest to all lovers of this best of autumn flowers. By attending carefully through the early summer to stopping the shoots, and later, to tying, specimen plants should now be in good shape. All that can be done from this time forward is to attend carefully to disbudding. We allow one bloom only to a shoot, which looks scant for a while, but experience has shown that one good bloom with a stout stem is preferable to half a dozen small ones.

We shall continue giving abundance of water, with liquid-manure every few days, until the blooms begin to open, with less and less afterward, keeping the roots and atmosphere drier during the blooming season. Under this treatment the flowers are not so liable to damp, and the color holds better.

Plants for blooms should have all their buds set by this time. They should be fumigated several times before it is too late. After the flowers open it is dangerous. With these plants, as well as those in pots, less water will be needed after the blooms open.

All kinds of buds have, no doubt, been taken, "first crowns," "seconds" and "terminals." It is most interesting to watch these various buds as they open and note which ones are the best for our purpose.

In the houses abundant air should be given, but draughts from the windward side should be guarded against, since they increase the liability to mildew and spot, which disfigures the foliage badly. We use a little fire-heat on damp days and severely cold nights.

Wellesley, Mass.

T. D. Hatfield.

Lime for Chrysanthemums.—Now that the buds are all set, these plants require liberal feeding, but care must always be taken to avoid overfeeding. The Chrysanthemum has a strong digestion, but even the most voracious plants are only capable of taking food in very weak solution, and if strong fertilizers are given they are worse than wasted, because the general health of the plant is impaired; the soil becomes sodden and sour by the accumulation of unwholesome acids, and the roots cease to act, so that, instead of feeding rapidly, the plants come to a standstill. It is good practice to change the fertilizer frequently, and an occasional application of lime will be of great service not only in the way of sweetening the soil, breaking up insoluble compounds and making them available for plant-food and clearing the pots of worms, but it is believed, also, that it actually strengthens the feeding properties of the plant. It is held that lime thickens the secretion inside of the root-hairs, and thereby assists them to absorb food more rapidly. Whether this is actually true or not, all experienced Chrysanthemum-growers know that lime is of great service in helping to build up buds and flowers, even although it is only to a limited extent plant-food in itself. Perhaps the most convenient way of applying lime is to place a quantity of it in a tub or other receptacle, then fill it up with water, stir freely, and allow it to stand overnight. The sediment will then be at the bottom, and the clear water may then be drawn off and applied to the plants. The parts of the lime which the water holds in solution will be found to produce the desired effect.

Tarrytown, N. Y.

William Scott.

Gloriosa superba.—It was Mr. Orpet, I think, who once said in GARDEN AND FOREST that "we learn much often by our failures." This may be true, but I have a great many failures, and usually do not profit much by them. Among failures which have conspicuously left me without a trace of gain is that with *Gloriosa superba*. The tubers of this plant, year

after year, start at their accustomed season with apparent vigor, but the stem, after reaching a height of six inches, invariably yellows and dies off. I shall be pleased to know the reason and the conditions of water, air and temperature requisite to grow this plant successfully.

Elizabeth, N. J.

J. N. G.

Correspondence.

When to Transplant Conifers.

To the Editor of GARDEN AND FOREST:

Sir,—I observe in your issue for September 19th, that Mr. Orpet recommends the transplanting of Conifers in autumn, and I have seen the same practice commended elsewhere. Mr. Robert Douglas, of Waukegan, Illinois, opposes, I understand, the fall planting of evergreens. Is there any peculiarity in our inland winters which makes it unwise to treat Conifers here as they are treated in the east? If it is true that the best practice varies in different sections, that is, if it is advisable to transplant Conifers here in the spring and transplant them in autumn throughout the Atlantic coast region, then your readers who reside in both sections should know it.

Highland Park, Ill.

W. C. Egan.

My experience agrees with the recommendations of Mr. Orpet that autumn is a favorable time for transplanting Conifers. I may add that when the conditions are favorable, August is a better month than September, and the last half of July is quite as good as August, since nearly all Conifers finish their season's growth before the 4th of July. My first experiment in summer transplanting was made more than thirty years ago. At that time many writers were stating in the agricultural papers that June was the best month for transplanting evergreens, and even Henry Ward Beecher wrote an account of his success in transplanting at that time, although June is the worst month in the season, as Conifers are then making their most vigorous growth. We bedded out more than fifty thousand Pines, Firs and Spruces, beginning on the 5th of July and ending on the 25th of September, during which period we planted every day except Sundays. Each planter had a tin pan in which the trees stood in a puddle while he was making a trench. We placed a few branches with the leaves on around the beds so as to give the young trees a partial shade, but at the end of four days these branches were removed to the new plantings, and we found that the first plantings were throwing out new roots. Of all the trees transplanted we did not lose five per cent., except of the Pines, which were transplanted in September, and not one of the Pines which were planted after the middle of September survived the winter. Experience confirms what one would naturally suppose, that planting trees in full foliage late in autumn must be unsafe, for after the ground is cold and the air is cold they will not throw out roots to supply the moisture which evaporates from the leaves. The trees we planted in July and August looked, on the following autumn, like trees which had been transplanted two years. We find little loss in transplanting Conifers of medium size in summer or early autumn, but our experience teaches that it is not advisable to ship Conifers when there is danger of hot or drying weather, with the chances of delay in transit and neglect at their destination.

I am satisfied by long experience that the safest period for transplanting Conifers is that from the time when the ground is settled in spring until the tree begins to make new growth.

Waukegan, Ill.

Robert Douglas.

It was the prevailing belief some years ago that the only safe time for planting conifers is about the middle of May, or as soon as the buds begin to burst into growth, and I still consider this time the best for all ordinary planting of evergreens, for the reason that they can be shipped in the early spring much more safely than at any other time of the year. They are less liable to heat while in a dormant condition, and no other class of plants will heat and spoil so quickly. Even with the greatest care they often arrive at their destination in bad condition; espe-

cially in the summer months, when a few days' transit is sufficient to ruin them. At the Arboretum I have had occasion to remove them at various seasons of the year, and I have come to the conclusion, where the plants are to be moved but a short distance, and are kept out of the ground only a short time, that they can be transplanted as safely from the last of August to the last of October as they can be in the spring. I have removed Spruces, Thuyas, Pines, Retinosporas, Junipers, Hemlocks and Yews in large quantities from the middle of September to the latter part of October with little, if any, loss. In fact, those moved about the 1st of June suffered more than those transplanted late in October under similar conditions.

The one indispensable condition for success is never to allow the roots to become dry, or nearly dry, and to have good, deep, well-pulverized soil all ready to plant them in. If planted well and firmly they will require but little water unless the season is very dry, and even then one good soaking when they are first planted will generally suffice. Many valuable trees are killed by overwatering, and thus causing the roots to rot. Last fall we had occasion to move several hundred conifers in October to make room for a new plantation of shrubs, and all the species above mentioned were represented in the lot. They were carefully dug and planted on the same day, and at this time ninety-eight per cent. of them are in good condition; in fact, they are in much better condition than another lot, of about the same number that was transplanted from the last of May to the first week in June. Conifers, as a rule, seem to make new roots about September, or as soon as the ground begins to get moist again after the summer droughts, and if they are not carried too far this is a favorable time to transplant them. The sum of the whole matter seems to be this: Where trees are to be transported a long distance it is safer and better to plant them as soon as the ground begins to get warm in spring. Where the plants are close at hand, or need to be carried comparatively short distances, and can be handled at once when they arrive, from the last week in August to the middle of September is an equally safe time, especially if a light mulch can be put around the roots at the approach of freezing weather, although the lot I have spoken of had no mulch whatever.

Arnold Arboretum.

Jackson Dawson.

Exhibitions.

The Horticultural Institute held at Fredonia, New York.

THE state institutes, which have been held in Chautauqua County, New York, each fall during the past three years, have been remarkable for their excellence and for the many exhibits of fruits, flowers and vegetables made each year. The attendance at the meetings has also been good, although the institutes occurred when nearly all the horticulturists of this region were in the midst of harvesting, packing and shipping the grape crop. Grapes are by far the most extensively cultivated fruit of this section. The grape-growers are a wide-awake body of men; they are on the lookout for all new ideas which can assist them in the work that occupies nearly all their time, from the beginning to the close of each year, and in this respect they excel most farmers, who are slow to take advantage of new methods.

The third annual grape, fruit, flower and vegetable show and horticultural institute was held in Fredonia, New York, September 26th, 27th and 28th. While, in making out the programme of exercises, the particular needs of the grape section were considered; nevertheless, some features of this institute have more than a local interest, and, indeed, should attract the attention of horticulturists in all parts of the country.

The exhibits of grapes and other fruits have always possessed the greatest interest. The various growers have exhibited their products in friendly rivalry and entirely without compensation, as no premiums were offered for the best shown. This same course was again followed this year, but another element was introduced, in accordance with a suggestion made by George T. Powell, of Ghent, New York, that the grapes should be judged in a systematic manner with regard to the following points: Flavor, size, color, symmetry

and firmness. Flavor was valued at ten points and each of the remaining items at five points. This allowed thirty points to represent perfect fruit. All plates of Concord and Niagara grapes were examined in accordance with this standard by a committee of two, of which Mr. Powell was the chairman; three men were on the committee which judged the seedling fruits. The Concord grapes were found to vary but little; the Niagaras, on the contrary, showed much variation in all points, except that of firmness.

Much interest was shown by grape-growers when the report of the committee was made, and although comparatively few records were read there were already indications of uniformity in the qualities of grapes grown on similar soils, and each soil seemed to possess a certain modifying influence on the grape grown upon it. This list is to be made as complete as possible, and it is hoped that the *Grape Belt*, of Brocton, will publish it in full. This new feature, introduced into the exhibit at the institute held in Fredonia, is full of promise for the future. It gives assurance that the time is coming when each horticulturist will make a close study of the character of the soil and of the particular varieties which will give the best results upon such soil. It marks that the time is passing away when a certain plant, as, for instance, the Niagara Grape, will be planted where the grower happens to want it, instead of where the plant will thrive best. It is also a step toward greater care and the exercise of greater judgment in the production and sale of fruits.

Another feature which is recommended to be introduced in future exhibits is the formation of a division which shall be devoted to the commercial side of fruit-growing, to packages and to methods of packing. This can also be made of great value if the idea is properly carried out.

With reference to the arrangement of future exhibits the committee suggests that—

"In order to get the most good from such a collection of fruits it would appear to be desirable that each label should bear the name of the variety grown, the name of the grower, his post-office address, and the composition and the character of the soil upon which the fruits were grown. By composition of the soil is meant whether it be sand, gravel, clay, etc.; its character may be described by telling of its elevation, drainage, etc. These data would be of the greatest value in determining the adaptation of particular varieties to the various soils of this region, and benefits of incalculable value should be derived from the proper study of such data. In fact, the horticulturists, not only of Chautauqua County, but of the entire country, are in great need of exactly this information, and the grape-growers of this region are now in a fair way of taking the lead in this important branch of horticultural investigation. It is recommended that in future exhibits made by the fruit-growers of this section the several varieties of soil may be well represented by the varieties of fruits grown upon them. In this manner the value of certain soils for the production of the many varieties of fruits can be clearly determined. The need of such work will be best appreciated by the men making the exhibits.

"The amount of fruit upon a plate should be uniform throughout the exhibits. It is obviously unfair for one grower to exhibit eight or ten times as much fruit as another if the two lots are to be judged by the same standards. When a certain number of individual specimens—five, for example—is upon each plate, the judgments will be more fair and accurate.

"The judges would also be materially assisted in their work if arrangements could be made by which all the exhibits of a certain variety could be brought together in one collection immediately before their examination. The work could then proceed with greater rapidity, and the labor of the judges be considerably lightened.

"The committee would further suggest the establishment of another division in the future exhibits which may be made in this region. The division is intended to include all those features which have a direct bearing upon the marketing of the fruit, but the study of fruit-packages and the methods of packing fruit should be made the principal aim of the division. Designs of new crates, the decoration or ornamentation of those now in use, the wrapping of individual specimens to preserve them or to render them more attractive, etc., all would tend to give shippers a better knowledge regarding the commercial side of the fruit industry, and the returns should increase directly in proportion to the amount of knowledge which may be gained in regard to the various demands of any given market, on the best methods of supplying such demands. It is believed by the committee that such an exhibit would rival in value the one in which are placed the varieties of fruits, labeled as above described."

Notes.

In converting Redwood into railroad ties it is stated that for every tie produced, which is worth thirty-five cents, timber to the value of \$1.87 is wasted.

On Saturday, October 6th, a certificate was awarded to Mr. Walter Hunnewell by the Massachusetts Horticultural Society for blooms of the Chrysanthemum Mrs. E. G. Hill. This is unusually early to have flowers of the large Japanese sorts in perfection.

A California fruit-grower says that although there is a long list of fine Cherries which do well in that state, near the coast or in certain higher elevations away from the sea, the prime favorites are the Black Tartarian, Royal Anne and Purple Guigne.

The Garry Oak, *Quercus Garryana*, is fruiting abundantly this year on the north-west coast. Professor Francis E. Lloyd, of the Pacific University, Forest Grove, Oregon, will be glad to furnish acorns to those who apply to him for them and remit the postage.

In the canal at New Orleans, near the cemeteries, *Pontederia crassipes* has become naturalized so as to cover the entire surface of the water for a distance of hundreds of feet. Steamboats push them aside in their course, but the plants close together quickly as the boat passes and completely occupy the surface as before.

Up to the beginning of this month 280 car-loads of raisins had left California. Finding storage rates in New York, Philadelphia, Chicago, St. Louis and Kansas City as low as they are in Fresno, the growers have been rushing their raisins to these cities, where they are held by the combination, who will sell them gradually as the prices and the market warrant.

Among the Cannas of recent introduction *Königin Charlotte* is certainly one of the most beautiful, especially when grown under glass. The flower-buds are so densely set on the spike that as soon as one falls another is ready to open in its place, so that the spike seems to last longer than that of most other varieties, while its glowing colors are certainly unexcelled.

A log of mahogany measuring forty-four feet and four inches long, sixty inches by fifty-six inches across at the base and weighing 2,166 tons, was cut in Guatemala and floated down to Laguna, Mexico, a distance of over three hundred miles, from which port it was to have been sent to the World's Fair. All vessels refused to carry it, and after lying at Laguna for more than a year the log was sawed in two and lately brought to Nesmith Brothers' lumber-yard at Greenpoint, New York.

A correspondent of the *Rural New Yorker*, in reply to an inquiry for a low hedge plant which will succeed in dry soil such as is found near the top of a retaining-wall, recommends *Ceanothus Americanus*. This New Jersey Tea, as it is commonly called, rarely grows in dry soil to a height of more than two feet, and it would require little pruning. It would make an attractive mass of foliage, and its erect clusters of pure white flowers at the extremity of the leafy shoots of the year last for a long time.

The London *Journal of Horticulture*, for September 20th, gives an illustration of a plant of *Eremurus robustus*, in which the base of the flower-spike is some distance higher than the head of a man standing by it. In a descriptive note it is stated that at the time the picture was taken the plant measured ten feet eight inches to the summit of the spike, which was still growing, only about half the flowers having then expanded. We have seen some fine plants of this noble herbaceous perennial in this country, but none of them have attained the dimensions of this English specimen.

The Superintendent of Public Instruction in Pennsylvania recommends the celebration of Friday, October 19th, as Autumn Arbor Day, and urges the teachers of the public schools of the state to do what they can to make the observance of the day instructive. One reason for the appointment of this day is that many of the schools in the rural portions of the state close in the spring before the appointed Arbor Day. It might be added that the middle of October is an excellent time to plant deciduous trees in Pennsylvania, when the work is properly done.

The white scale, which has been so destructive to California Orange-groves, has never been found east of the Rocky Mountains until this year, when undoubted specimens of the insect were sent from Hillsboro County, Florida, to the Entomological Department, Washington. They were reported in such abundance on the trees as to make it probable that the species

will thrive perfectly well in the climate of Florida, and unless active remedial measures are at once taken orange-growers there are threatened with great loss. The matter is being studied by an agent of the division, who has gone to Florida. Whether or not it will be found advisable to introduce the imported Australian vedalia into the groves of Florida remains to be seen.

It is not uncommon for shrubs and trees which flower in the spring to have a second season of bloom in autumn. When the wood ripens early, as it did in many places this summer on account of the long drought, the flower-buds on such plants often open under the influence of fall rains and warm growing weather. This second flowering is not so common, however, on trees and shrubs whose flowers are formed on the wood of the year, but we have recently observed several large Tamarisks of the late-flowering section, which are covered with pink plumes almost as thickly as they were in August. The branches seemed to have started into new growth at once when the autumn rains began, and they have had time to produce a new crop of buds, which are now fully open.

Chrysanthemums of the early-flowering sorts are now quite common in the market. In a collection of the kinds sent out by Delaux, which are grown in considerable quantities in the houses of Peter Henderson & Co., the best early white is Madame Gastellier. The flowers are of good substance, broad-petaled, with no appearance of an eye when fully developed, and they were ready for cutting in full form on the 1st of October. They remain perfect for a long time if the plants are kept in a cool place. This variety seems to be ten days earlier than Mrs. Bergmann, which was formerly considered the leading early white. Veuve Cliquot is an early yellow variety, which was ready to cut in quantity on the 2d of October. The flower is a rich chrome-yellow with an orange base. Madame Chauvin, which is quite as early, is a good-sized flower of a light rosy pink color. Monsieur Henri Galice is another early yellow. Other varieties coming into flower are J. B. Duvoir, a deep lilac; Madame Fleuret, with a light lemon-colored centre changing to white, and broad-cupped, rose-tipped petals; Eugene Farez, a light bronze, with yellow reverse; Professor Walter Croz, a fluffy cream-white; Georges Devred, a good yellow; Madame Jacob, lilac-rose and silver reverse; Gustav Grunerwalde, light rose-pink, and a white sport from this variety, which seems to be a first-rate flower, and some days earlier; Monsieur François Katzer, a disheveled Japanese variety, chrome-yellow, and orange reverse, and Monsieur F. L'Usmayer, a good orange. The earliest large-flowered Chrysanthemum in the collection is Marian Henderson, a good yellow, from *Gloriosum*, probably crossed with Mrs. Hardy.

Until a week ago Silver prunes and Ickworth plums came from California, together with Kelsey plums, and the latter commanded as much as \$3.25 a box at the wholesale auctions. The only plums now arriving are Coe's Late Red, a medium-sized fruit—said to have a rich vinous flavor, but whose chief value is in its lateness. Last season these plums were on some of the fruit-stands in this city until the first of February. Peaches constituted the greater part of nearly fifty car-loads of California fruit sold here last week, the varieties including George's Late, Salway, Heath Cling, Lemon Cling, Orange Cling, Levi Cling and Morris White. Prices have been low, ranging from fifty to eighty cents a box. The limited supplies of Verdel, Muscat, Malaga, Cornichon and Tokay grapes sold quickly on the piers at \$1.00 to \$2.15 a half-crate to wholesale buyers, and boxes made up of Flame Tokays, Black Morocco and green Muscats, arranged attractively in bands of different colors, look very inviting. Stem-cut Florida oranges of good quality are in demand at \$2.25 to \$2.50 a box, at wholesale, but within the past week many boxes of windfalls have been hurried into northern markets. This bruised and decaying fruit in no case realizes the cost of freight, and many boxes have been left on the hands of the transportation companies by consignees unwilling to handle a worthless grade of fruit. Even the best Florida oranges are yet green, the only ripe and mature oranges being those from Jamaica. Grape-fruit from the same island, of fair size, sells for \$1.75 a box, and immense blood-shaddocks, forty of which fill a barrel, are ten cents apiece at wholesale. Slender yellow pineapples, from Florida, known in the trade as the Egyptian Queen variety, may be had at fifteen cents apiece. The first cargo of 10,600 barrels of Almeria grapes is expected to arrive about the sixteenth of this month. About 8,000 barrels of cranberries have reached New York since September 1st, less than half the quantity handled during the same period last year. There is, however, no advance over the prices of last year, and choice, dark Cape Cod berries may be had at \$8.50 a barrel.

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The Garden in Autumn.

A CORRESPONDENT mildly remonstrates with us on what he considers our partiality to spring gardens. He adds that even while the woods are beginning to glow with their richest colors we are celebrating the value of spring-flowering bulbous plants, and he asks why we do not say more in commendation of the beauty which gardens may be made to show in autumn.

We are not aware of any failure or neglect in the direction indicated. It is true that we do not always wait until spring to call attention to spring flowers. All that is delightful in an early garden is the result of preparation the year before, and we aim to give novices seasonable advice as to when and how to plant, so that when spring returns every root and leaf will be ready to start and every flower-bud waiting to open. After our long winters, the spring opening is always in some respects a new creation, and hardy flowers which greet us then make an impression more vivid and different in character from any which we experience at any other time. This is not because these early flowers are the most beautiful of the year, although nothing lovelier follows them; nor is it altogether due to a certain sub-conscious sympathy with them for having braved the storms of winter and dared to appear in the wild weather of our fickle spring; nor is it quite explained by the fact that our gardens have been cheerless for many months, so that these welcome flowers appear like lost friends restored; nor by the fact that this is the season of hope and that we see in the early flowers a promise of all the fruitful seasons are to bring. But all these together, and other reasons no less powerful, because born of imagination or sentiment, give a captivating freshness of interest to early flowers that are peculiarly their own, and there is little danger that we shall advocate too often or too strongly the practice of making a specialty of the spring garden.

Now, there is nothing in all this to indicate insensibility to the charms and graces of an autumn garden, especially in this climate, and it may be added that one argument we have used for a spring garden applies with equal force to the autumn garden. Many American families leave their homes when the hot weather approaches and journey

to the mountains or to the sea. In summer their houses are shut up and their gardens may as well be desolate for all the enjoyment their owners get from them. We have, therefore, advocated the use of early-flowering shrubs and plants, and combinations which are especially beautiful from the time when the first Snowdrop opens until the close of the Rose season. Most of these summer wanderers return to their homes in September, and they will be there to enjoy their gardens through the autumn, and, of course, this is a good reason for making special effort to make these gardens attractive at this season. Besides this, it can be truly said that there is no season of the year which is comparable to our American autumn for the enjoyment of the woods and fields, and there is no time when one can wander in the garden with equal comfort or pleasure. Every year we have spoken of the wonderful variety of effects which can be produced by planting trees and shrubs with regard to the colors of their autumn foliage, and every year we have given specific notes as to the times when the different varieties turn and the peculiar tints they assume. We have also given special attention to the shrubs which bear ornamental fruit. The Dogwoods and Viburnums, the Privets and Barberries, the species of *Celastrus*, *Vitis*, *Rose* and many others have been noted with regard to the beauty of their fruits and the time of their ripening. To one who has not studied this ornamental feature of many shrubs, the scarlet and crimson, the deep purple and blue, the amber and pink and white of the clustered fruits, and the delicate bloom on many of them will be a revelation. The herbaceous plants which flower in autumn also have a distinctive beauty. Stately Sunflowers, *Silphiums*, *Boltonias* and many more make bold effects which are possible at no other time of the year; and there are lower growths, like Autumn Crocuses and *Colchicums*, which rival the dainty beauty of the earliest spring flowers. But there is no need to repeat the details we have often given of the material at command for making a rich display as the year closes. In other columns of this issue characteristic articles will be found, and we can think of no ordinary element of garden beauty possible for the season which has been overlooked or neglected.

If autumn brings to the owner of a garden any abatement from the keen delight he has taken in it, this is hardly due to satiety, although he has been enjoying it without cessation for half a year. Gardening is a pursuit of which one rarely wearies. But it is hard to keep up sustained enthusiasm in a small enclosure when all the effects attempted are displayed on so grand a scale without. Our beds of yellow flowers look dull when acres of Golden-rod stretch away beyond them; our clumps of purple and blue are insignificant when compared with the stretches of *Asters* by every roadside; the foliage on our *Spiræas* may be bright, but there is a forest of flame in sight, while the wayside shrubs, and even the herbs of the field, are glowing with colors as rich as any we can show. Of course, it is true that there are attractions just beyond the fence of the spring garden, but they are not quite in line with our own efforts. There is an unspeakable beauty in the fields and woods of spring, but it is not of that obtrusive kind which flares out in the autumnal landscape, and it is not a repetition on a limitless scale of what we are trying to produce in our shrubberies and flower-borders. This hopeless rivalry with universal nature gives a pathetic interest to autumn gardening, and this interest is not diminished by the apprehension of the killing frost which forever threatens in this latitude after the third week in September. Such apprehension revives our sympathies and stirs us to devise means of protection, and the greater our effort and solicitude the closer we are drawn to what can be rescued for a brief period of prolonged life. No doubt, the comfort and refreshment of spirit which an autumn garden can supply will make ample return for all the labor and thought expended on it; and it is to be hoped that all our readers who have not already made preparations for next

autumn will begin at once to plan and act, for there is not a day to spare.

PERSONS who have a full appreciation of the manifold uses of city parks and of their refreshing value to a city's population are often impelled to protest against some invasion of these green spaces. In a crowded city everybody wants room, and there is no end of projects to get hold of it, especially when it can be had for nothing, and the officials in charge of a city's public grounds often do practically give away park-land, every square foot of which is worth as much money as many an acre of good farm-land. In this city our parks are constantly threatened with confiscation for buildings or railroads or trotting-courses, or for a hundred other objects. We are accustomed to think, however, that they do things better in the Old World, and wish for some of the public sentiment which has protected the open spaces of London, for example, during so many generations; but the truth is that the same struggle is going on in all the great cities of the world. Not long ago the *London Standard* contained a vigorous protest from Mr. William Robinson, because a band-stand had been set up in the Temple section of the Victoria Embankment Gardens. It seems that the proprietors of certain newspapers had subscribed a sum of money to provide music gratuitously for the printers during the leisure of their dinner-hour, and the chairman of the Parks Committee of the London City Council answered Mr. Robinson that, inasmuch as the music cost the city nothing, it was the duty of the Council to provide a convenient stand out of the public money, and therefore they erected one in the gardens. To this Mr. Robinson made reply:

If the music-loving people are allowed to erect any structure to meet their wants in what is clearly intended to be a public garden, for the same reason other bodies may prevail on the City Council to allow them, for some frivolous end, to occupy and disfigure the gardens which belong to the people of London, and any one can see what this will lead to ultimately. It required a long and costly struggle to secure these parks, and it is clear that if the Council does not protect them from encroachment they will, in time, become mere parade-grounds. They were small enough originally, but a little grass and a few trees were refreshing. When, however, an ugly structure—or any structure—is set up in their centre, with asphalt walks leading to it, all possibilities of verdure and repose are destroyed. Evidently some people's idea of a public garden in London is one with a band-stand on one hand and a ginger-beer shop on the other, or we should not see these things in what ought to be quiet and refreshing green. One can realize the wild joy of Africans on finding such signs of civilization in a comparatively airy desert, but why they should be placed in the midst of a town-garden while there are music-halls and concert-rooms and ginger-beer shops all around them in the street, is not easy to see. It is not only to-day that must be thought of; every year will bring pretensions for refreshment-rooms or band-stands, and always, where possible, they will be placed in the middle of the open space or in some once pleasant lawn in it, thus destroying its unity of design and all its beautiful and refreshing effect.

Very plainly, there are men in London, and officials, too, as well as there are in more than one American city, who think that the only way to improve an open space is to build something on it, and who do not realize that grass and shrubs and trees are possessions of just as immediate practical value as pure water, good drainage, fresh air, hospitals, schools and churches.

Prairie Woodlands.

WHEN pioneers began to settle in our primeval forests the natural impulse to plot in right lines led to the clearing of rectangular spaces, so that the surviving pieces of woodland are mostly bounded by straight lines. Time has, however, modified and beautified the abrupt and naked forest-borders that skirted the newly cleared fields. The taller trees along the margins have been overturned by the wind, lower ones have grown up with rounded tops and limbs which spread out to reach more light; an under-

growth of shrubs and herbs has sprung up by the enclosing fences, so that an unbroken bank of foliage stretches from the ground to the tree-tops.

In the woodlands of a prairie region these sloping borders are characteristic, and the bounding lines naturally curve with the windings of streams and valleys and the outlines of timber-clad hills. These masses of timber are often surrounded by treeless prairie or cultivated fields, the woods being left to supply the adjoining country with forest-products. The large trees have been cut off, but the ground is left to grow up with timber again, and under the stimulus of self-interest a kind of rude forestry is practiced. If the wooded areas are too large to be embraced with profit in adjacent farms, they may be divided into portions of a few acres, and be owned by several farmers living within easy distance. These small holdings in the groves are bought and sold with the main estate, and this also tends to their preservation and keeps them in larger tracts, so that one may sometimes follow belts of unbroken woodland for miles along a stream. Fed by springs which issue from the bases of the bordering slopes, even the small streams become perennial in the shade of the woods, though when followed away from the forest a dry bed may mark their course through the prairie in summer. The farmer thus becomes a conservator of the woodlands which help to preserve moisture for the soil, as well as to form one of the most pleasing elements of the landscape; for this region is monotonous as a whole—a plain with no striking features in the way of hills and mountains.

These wooded areas are generally used for pasture, frequently to their injury; but cattle and horses being chiefly kept, the undergrowth is not as closely cropped as when sheep have their range. Portions of the adjoining prairie are often included in the pasture, especially on the hills or along swampy lands. Points of timber jut out from the main body into the prairie, running down the hillsides or along ravines and watercourses, or out into swamps into which drier land projects. An occasional tree or small group of trees stands apart from the rest, still further varying the outline of the border, while larger groups, like islands in a sea of prairie, lie apart from the main body. The use of the tree-covered ground and the adjacent prairie for grazing often saves these isolated trees and groups; for where land is devoted to the plow they are apt to be cut down, as may be observed where the rich soil of the prairie comes close up to the woods. If in wetish grounds the trees may be spared because they do not encumber a meadow from which hay is taken, and which may be pastured only a part of the year. The limbs of these detached trees or groups come down low about the trunks, the tops are round and spreading, and a sturdy and symmetrical habit has been developed by the free play of light and air on every side.

A pleasing feature of these woods is the way in which the border merges into the green of the prairie. Belts of trees lining low and swampy prairies, or the sloughs with which they are interspersed, become attractive, or even beautiful, notwithstanding many of their unpleasant surroundings. A continuous mass of foliage joins the green below with that at the tops of the tallest trees. Willows and Alders, the Swamp Rose, Button-bush and Osiers of various kinds are followed by Viburnums, Sumachs and Sassafras. These and other tall shrubs or low trees furnish a gradual or undulatory slope from the rank Grass, Reeds and Rushes of the swamp to taller Elms and Swamp Maples, and the Oaks and Hickories of the drier background. The wide variety in the tints of green foliage makes these borders attractive in summer, and when autumn kindles its fiery colors in the leaves they are fairly radiant with beauty. Various shrubs connect the dry upland woods with pasture and meadow. The leaves and glandular twigs of the Hazel are not agreeable to browsing animals, and it becomes common along the margins of woods and fields, or forms outlying masses between the field grasses and the foliage of Oaks and Hickories. In

lower and richer ground the Hazel is replaced by the Crab Apple, the Wild Plum and different species of Thorn.

The prevalence of Oaks with smooth and glossy leaves gives to many of these woodlands a peculiar distinctness under the glow of the summer sun. A shimmering light plays upon them, as well defined, although not as bright, as that which glances from a water-surface, and these bright areas catch the eye from a distance, and in the broad sweep of the green landscape these forest-masses rise out of the general level as sources of clear mellow light.

Chicago, Ill.

E. J. Hill.

Native Trees and Shrubs about Montreal, Canada.—IV.

ULMUS AMERICANA, the American or White Elm, is an abundant tree here, and specimens with trunks three or four feet in diameter are frequent. It shows as much variability in form as it does in New England. *U. fulva*, the Red or Slippery Elm, called "Orme gras" by the French Canadians, is more common than the American Elm in some localities, and is most abundant on moist rocky soils or near water. *U. racemosa*, the Cork-barked or Rock Elm, is recorded in Macoun's *Catalogue of Canadian Plants* as rare in the eastern townships of the Province of Quebec, and extending westward throughout Ontario in the limestone areas. The "eastern townships" comprise the counties just north of Vermont and New Hampshire. The Cork Elm is also found in Huntingdon County, and probably other counties in this extreme corner of the Province. It occurs on Montreal Island in the vicinity of St. Laurent, along the upper Lachine Road, and probably in other localities, forming fair-sized trees, with characteristic corky, strongly depressed branches.

Celtis occidentalis, the Nettle-tree, Hackberry or Sugarberry, is the "Bois inconnu" of the French Canadians. It is considered rare, and seems to be of somewhat scattered distribution, not generally occurring in large numbers together. Montreal is about its most northern known habitat, although some small specimens have been found on the Ottawa River. The late Charles Gibb, in an essay recommending the introduction of hardy trees into the Province, mentions the Hackberry as worth bringing from the west, not knowing that it was thriving naturally at home. On St. Helen's Island, directly opposite the Montreal city wharves, there are many specimens of this tree growing in the natural woods, two of the largest measuring about seven feet and eight and a half feet in circumference. On the banks of the St. Lawrence between Montreal and Lachine, and bordering the famous Lachine Rapids, there are many good specimens to be seen, one rugged old tree measuring over eight and a half feet in circumference of trunk at four or five feet from the ground, and this trunk nearly touches that of another almost equally large. Fine specimens also occur at St. Anne's, on the western extremity of the island, and there is a good group of the trees on the south side of the St. Lawrence a couple of miles above the mouth of the Chateauguay River. The Hackberry is an interesting tree, though readily mistaken for an Elm by a careless observer. It is worth noting that several species of the peculiar gall-making insects (*Pachypsylla*), which affect the tree farther south, have followed it in its northern range.

Juglans cinerea, L., the Butternut or White Walnut, is common. The Black Walnut, *J. nigra*, L., is not indigenous, but is hardy, and has been planted in timber experiments farther north.

Hicoria ovata (*Carya alba*), the Shag-bark Hickory, is found on Montreal and other islands in the St. Lawrence, and is plentiful on the rocky ridges along the south shore of the St. Lawrence through Caughnawaga and Chateauguay. This tree and the Butternut furnish the principal "nutting" in the autumn, as the Chestnut does not thrive in this climate. *H. minima* (*Carya amara*), the Bitternut, Pignut, or, as it is called in

some parts of New England, "Hog Walnut," is more common than the Stag-bark Hickory, and is commonly found in moist situations. Both of these Hickories are only found as small saplings on the Indian Reservation, because the wood is eagerly sought for by the Indians for their various manufactures. A small nut resembling that of *H. glabra* is sometimes collected by the habitants at Chateauguay, but I have not seen the tree or obtained other specimens. The nuts are sometimes locally called "Sweet-bitter Hickories," probably on account of some slight likeness to the Bitternut in nut or tree.

Myrica Gale, Sweet Gale, is common in wet places and along banks of ponds and streams.

Betula lenta, the Sweet or Black Birch, is common, and grows to large size. *B. lutea*, the Yellow Birch, is also abundant. *B. papyrifera*, the Canoe or Paper Birch, is not so common as it once was, but is still frequent in woods. *B. populifolia*, the small White Birch or Gray Birch, is common on the borders of woods or in openings in woods, especially on the poorer soils.

Alnus incana, the Speckled Alder, is abundant. It is common to find old plants which regularly bear only pistillate catkins. In its wide range in this country, as well as in Europe and Asia, this Alder shows much variation, quite as much as in the cases of some plants where varietal or even specific names have been established.

Corylus rostrata, the beaked Hazel-nut, is the common species of this region. The nuts are often collected, and, though small, they are quite as sweet and edible as the European Filberts of the markets.

Carpinus Caroliniana, the Hornbeam, or Blue Beech, as it is usually called in this region, is common on wet, rocky soils, or near water. It sometimes grows singly, but more often several small, inclined stems rise from the same root or base.

Ostrya Virginica, the Hop Hornbeam, better known as Lever-wood or Iron-wood, is common and forms fair-sized trees, and the wood is much valued for its strong, tough, unbending character.

Quercus macrocarpa, Bur Oak, or Mossy-cup Oak. This is the common White Oak of the region about Montreal, although it has generally been mistaken for *Q. alba*, and is so given in some local lists. It shows very great variability, and some extreme forms certainly show much likeness to *Q. alba* in leaf, acorn and cup. In the woods it forms first-class timber-trees, and in the pastures and fields handsome broad-spreading, shade-giving specimens. The "bur" or "mossy" character of the cup is generally much less developed than it is in some of the western forms, and the corky character of the bark of the branches is also often much reduced.

Quercus alba, the true White Oak, may be considered as comparatively rare or uncommon in this locality, though probably once more common than it is now. It is occasionally seen in the woods on the south side of the St. Lawrence. Professor D. P. Penhallow, in *Notes on the Flora of St. Helen's Island, Montreal*, published in the *Canadian Record of Science* for September, 1891, gives *Q. alba* as one of the trees on the island; but *Q. macrocarpa* is probably referred to as it occurs there and is not mentioned.

Quercus bicolor, the Swamp White Oak, is not a rare tree on the Island of Montreal, and is very common in some localities in the woods on the south side of the St. Lawrence. It is most often found on rich, rather low moist ground, with underlying rocks or gravel. It becomes a fine, large tree about as useful as either of the preceding species, and undoubtedly generally mistaken for them. It is best distinguished from them by its more leathery, lesser-lobed leaves, which are usually velvety downy on the under side, by its longer-stalked fruit, and especially by the old bark of the branches splitting in the direction of the branch and curling up in thin flakes along the branches.

Quercus rubra, the Red Oak, appears to be the only species of the Black Oak group, having bristle-pointed leaves and requiring two years to mature fruit—which occurs in

this region. It is found almost everywhere in woods occurring from the top of Mount Royal through the surrounding country. It naturally extends much farther north, and some attempt has been made to establish a botanical variety out of the boreal form, but no difference can be observed between the trees as they grow about Montreal and occur in southern New England.

Fagus ferruginea, the American Beech, is common, and becomes a large tree, though the wood is not much used, except for fuel. The edible nuts are often found in the markets; they furnish food for such birds as blue jays, for squirrels and other rodents, and for the bears which are found in the mountains within fifty miles, and which are said to climb the trees in search of the small sweet fruits.

Arnold Arboretum.

J. G. Jack.

Birds Injuring Apples.

WHEN the orchardist, after suffering from attacks of insects, fungi, small boys and other depredators, finds himself attacked by those he has always considered his friends, he may be excused for some feeling of discouragement. Yet such has been our experience in apple-growing at the Experiment Station farm this summer. The old orchard has far outlived its usefulness and is an object of pity rather than of pride. It has had to contend against blight, borers, butchery instead of pruning, and numberless other obstacles. Yet, in spite of them all, a few of the trees still retain some vitality, and they promised to yield a fair crop. As the apples approached maturity, however, they were attacked by the birds to such an extent, that from trees which should have yielded two or three bushels, no fruit was harvested. To leave them until fit to pick meant not to pick them at all. The injury has been worse on the fall and early-winter apples, though even the late varieties have not been wholly exempt from attack. The injury is doubly great because, after a bird satisfies himself for the moment he leaves that apple and may never return to it again, simply taking another the next time he is apple-hungry. Whether he returns or not, the apple is ruined.

At first it was thought that the blue jays were responsible for the mischief, but it was soon discovered that they were not alone in the depredation. Blackbirds, robins, red-headed woodpeckers, yellow-hammers, brown thrushes and one or two other species have been observed working at the fruit. The blue jays are, perhaps, the worst in proportion to their numbers, but the robins and blackbirds are more numerous and consequently do more damage. The blackbirds, in particular, frequent the orchard in large flocks and are capable of doing an immense amount of damage.

Juicy apples seem to be preferred, even though very hard. In the summer many of the Crabs were injured, but none of the Sweet June variety. This has been an exceedingly dry season, and the ordinary supplies of bird-food are, no doubt, somewhat deficient. It was also suggested that they might attack the apples to get the moisture, although there were tanks of water not far away. Five troughs of water were, therefore, placed in the orchard at convenient points and watched for a time. The birds very soon found and made use of them, but continued to eat apples just the same. It is possible that had this been done before the habit had become so firmly fixed it might have mitigated the injury somewhat. On the whole, however, the indications are that the birds eat the apples because they like them. So far as I know, this is a trick which eastern birds have not learned, and the eastern grower may earnestly hope that they will not.

Agricult' Exp't Station, Nebraska.

Fred W. Card.

New or Little-known Plants.

Two New Species of *Ilex*.

EXPLORATION of the high mountains of the Cape region of Lower California has brought to our knowledge many new and interesting plants and trees. Quite

unexpected, however, was the discovery of two species of *Ilex*, a genus that is without representatives in the western part of the United States. Both these species of *Ilex* grow in cañons near running water and about the highest summits of the mountains between La Paz and Cape St. Lucas.

*Ilex triflora** (see p. 415) is a handsome tree, and well worthy of cultivation in Alta California, where it would probably prove to be hardy, for it is often subjected to heavy frosts in its habitat at 6,000 feet elevation above the sea. It grows to a height of fifty feet or less, and in general shape resembles a Lombardy Poplar; the branches are very numerous, short, horizontal and repeatedly divided in all directions, so that, excepting at the trunk, the tree presents to view a mass of leaves impenetrable to the sight. The trunk, a foot or more in diameter, is nearly smooth, of a grayish color, and visible only for about six feet from the ground. The tree is not very abundant, and, unless to be found on the mainland of Mexico, will always be rare.

Ilex Californica† (see p. 416) is more common, and not as handsome. It is more properly a large bush than a tree, although often it is undoubtedly a small tree. It grows to be ten or fifteen feet high; the branches are widely spreading and the leaves thick. I have never seen it in flower, but have been able to find plenty of fruit in October and January. It probably blooms early in summer, for dried remnants of old flowers can be seen about the fruit in October. *I. triflora* blooms in October.

San Diego, Calif.

T. S. Brandegee.

Plant Notes.

QUERCUS MACROCARPA.—The Bur Oak does not transplant as easily as the Swamp White Oak or the Pin Oak, because these last two naturally make many more small roots. The Bur Oak, however, and most other Oaks can be safely transplanted if they are pruned back almost to the main stem, and thus trees from four to six feet high are pretty certain to survive and thrive. In time the Bur Oak becomes a massive tree, with that expression of rugged strength which characterizes the best Oaks, but it is also a beautiful tree when young, and some specimens about twenty years old, which we have lately seen, were exceedingly interesting. Its branches low and into fine form, makes a strong growth, and when young has dense and heavy foliage. Our native Oaks are strangely neglected by American planters. The general impression seems to be that few of them can be safely transplanted, and that they grow so slowly that the planter will never see them develop into anything like beauty. The truth is that they are not exceptionally slow in growth; that most of them have a peculiar beauty of their own when young, and, in short, that they are among the very best of our trees for use in parks and large places; while in smaller places, where only one good specimen tree can be grown, it is often the case that some species of Oak will be the best possible selection.

SALVIA SPLENDENS, CLARA BEDMAN.—This variety of the well-known Scarlet Sage is a good example of the changes in character and habit which are occasionally developed in old-fashioned garden-plants under cultivation. Mr. C. W. Matthews, of the Kentucky Experiment Station, writes that plants of this variety from seed sent out last spring by a Philadelphia firm have shown a marked superiority over the type during the season just closing,

* *ILEX TRIFLORA.*—Tree 15 m. high or less, with short, spreading branches; young shoots, petioles and peduncles rather densely pubescent; leaves elliptic-lanceolate, entire or spinose-serrate in the upper half, acute, 5 to 8 cm. long, sparingly hairy above and below, and green on the upper surface, whitish and veiny beneath; petioles 5 to 8 mm. long; peduncles 1 cm. long, usually 3-flowered on pedicels, about equaling the peduncle, and bracteate at base; inflorescence coarsely short-hirsute; floral organs in fives; segments of the corolla strongly united in the lower fourth; ovary 5-celled; fruit not seen.—La Chuparosa, Baja California.

† *ILEX CALIFORNICA.*—A bush or small tree, 3 to 4 m. high, nearly glabrous throughout; leaves thick, coriaceous, elliptic, oblong-elliptic or oval, 6 to 12 cm. long, 2 to 3½ cm. wide, remotely shallow-serrate, veiny beneath, not shining; flowers in axillary, shortly pedicellate clusters; calyx 4-parted, the segments ovate, scarious above; corolla not seen; fruit the size of a pea, smooth; cocci 4, the testa incompletely lacunose.—La Chuparosa and Sierra de la Laguna, Baja California.

when the two were grown side by side. The new variety is darker in foliage and somewhat dwarfer and more compact than the ordinary form, but its special merit was brought out by the prolonged drought of the past summer. For a long time during the hot and dry weather plants of the old form would drop their flowers—at least, the corolla, and often the calyx as well—almost as fast as they were produced, leaving only bare and unsightly stems, while

LYCHNIS FLOS-CUCULL.—What seems to be a variety of the well-known Ragged Robin was sent out by some European nurserymen two or three years ago burdened with the name of *Plenissima semperflorens*. The plant is apparently as hardy as the type here, and it blooms constantly in the open air from midsummer onward. The flowers, in very open terminal panicles, are lightly carried on thin stems eighteen inches long; they are smaller than



Fig. 65.—*Ilex triflora*, n. sp.—See page 414.

the newer variety, although, of course, checked in its growth, persisted in displaying abundant flowers throughout the heat and drought. For flower-lovers who lack an abundant supply of water for bedding-plants, this power of endurance through such adverse conditions as those of the past summer is a quality well worth considering when selecting plants in the spring.

those of the type, but quite double, and of a singularly deep rose color. The loose clusters on the arching stems are very graceful, and a dozen of them in a slender vase appear to very good advantage. The plant resembles the type, having very narrow and almost linear leaves, and, besides its value in the border, it is said to be useful for winter-flowering.

Fig. 66.—*Ilex Californica*, n. sp.—See page 414.

Cultural Department.

Autumn-flowering Bulbs.

Colchicums.—These, the Meadow Saffrons, are, by far, the showiest of the class. Beginning to bloom in the middle of August, they continue through September, even into October, covering the ground with their bright purple flowers. They are at their best when planted thickly in clumps in garden-

beds; in England they are often naturalized in the grass or wild garden; the low price of the bulbs would make this an experiment easy to try here. The soil should be trenched and plenty of well-rotted barnyard manure worked in; a sandy loam is preferable. Plant as early as possible; the bloom the first season is sometimes a failure on account of the bulbs starting into flower in the packing-cases. The bulbs, which are long, should be set deep, the tips nearly two inches below the surface; in late autumn they should be covered with a light layer

of pine boughs or needles. Leaf-growth begins in April, when still further dressing can be given, stirring the manure into the ground among the plants. The leaves grow a foot or more high; plenty of room should, therefore, be given for them to expand, while free access to air and light conduces to the good development of the plants. With the leaves come the seed-pods, which should be at once removed, to prevent unnecessary labor to the plant, unless needed for new stock. Ordinary propagation is by division, but the bulbs are so cheap it is better to buy them. Treated in this way, never lifting them in early summer, as Tulips and Hyacinths are sometimes lifted, they will continue to flower for several years; when they do begin to deteriorate they must be dug, separated and replanted, just after the leaves turn yellow in July.

Colchicum autumnale and its varieties are the best known; the type is a bright, light purple, with white throat; the variety *album* is a good pure white; *atropurpurea* is dark purple; *variegatum* has checkered flowers, but not variegated leaves, as is sometimes thought; there is also a double purple and a double white.

Colchicum speciosum is finer, larger, and of better color, shape and substance than the preceding. It is easily handled, perfectly hardy, and in every way a most desirable plant. It is a native of the Caucasus, and is described and figured in the *London Garden*, vol. xi., page 548, a colored plate.

Colchicum Parkinsoni, figured in Parkinson's *Paradisus Terrestris* (1629), p. 155, has curious checkered or tessellated flowers, with comparatively low and wavy foliage. It makes a pleasing variety to the group, but is not so easily grown as the others.

There are still other species obtainable, some of which bloom in spring; these are hardly suitable for ordinary cultivation.

Colchicum autumnale has been used in medicine as a remedy against gout. Toxic qualities are ascribed to the corns, and curious tales are told, unverified here, of the color-effects on one's fingers if they are brought nearly in contact with the flower at certain stages of its bloom; it is said they will turn "a livid greenish yellow" or a "bright saffron."

Autumn Crocuses.—Another class of autumn-flowering plants is found in this genus. The general characters are much the same as shown in the spring-blooming kinds, but there is not the same variety in coloring. They are in flower from the middle of September, through October, and occasionally into November. Cultural directions are the same as given above for *Colchicums*; there is generally a leaf-growth in autumn, which, however, need cause no anxiety, as the foliage is apparently unharmed by frost.

Crocus speciosus is, in my opinion, the best; it is now, October 3d, in full bloom, of a bluish purple color, with white marks, very delicate in tone, far surpassing the better-known spring-flowering species. The stigmas are large and of a vivid orange color, which blends well with the purple of the petals, making altogether a very bright appearance in the garden. Like the *Colchicums*, they should never be lifted until they need to be separated because overcrowded; they also should be planted in masses. The bulbs are inexpensive; it seems unaccountable that such a lovely plant should be so uncommon in gardens.

Crocus sativus is not as satisfactory a plant as the preceding; the coloring, shape and texture of the petals are inferior, and it is neither so abundant a bloomer nor so easily handled. This is the true saffron; it is from the stigmas of this plant that the saffron dye of the classical writers was obtained, as many as 4,000 flowers being required to make a single ounce. There is another plant known sometimes as Saffron in our gardens, *Carthamnus tinctoria*, which belongs to the *Compositæ*.

Crocus Boryi, white, with a yellow throat, and *C. zonatus*, *C. nudiflorus*, *C. pulchellus*, *C. Byzantinus* of various shades of lilac, with white and yellow markings, the large characteristic orange stigmas always being in evidence, are other species hardy here and easily obtained. *Krelarge* and *Van Tubergen* offer still other sorts, all inexpensive. In the *London Garden*, vol. xxx., page 476, there is a colored plate and description of thirteen varieties.

Since these *Colchicums* and *Crocuses* have no foliage of their own when flowering, the bloom springing directly from the bare earth, it is well to provide some low-growing plant as a carpet. English Ivy is recommended, where it proves hardy; *Lysimachia nummularia* and some *Sedums* are excellent; a low-growing *Artemisia*, *A. rupestris*, *A. alpina* or *A. frigida*, might be used; *Periwinkle*, *Vinca minor*, is too dense.

Zephyranthes candida is tender here in the open air, but would probably be hardy farther south; it is a lovely pure

white *Crocus*-like plant, blooming freely in pots during September.

Amaryllis belladonna, var. *Hallii*, is apparently a hardy form of the well-known *Belladonna Lily*; it is rare in cultivation, and should be more frequently used. *A. belladonna* itself is sometimes found fairly well established in the open air in this neighborhood. The bulbs should be planted deep in well-drained soil in a sheltered, but sunny, situation, and carefully covered in winter. The flowers come in August, after the leaves, which make their appearance the middle of May, have died down. Whenever, as is sometimes the case, there is a large stock of bulbs on hand, this experiment is well worth trying.

Sternbergia (*Amaryllis*) *lutea*, a beautiful bright yellow, *Crocus-Amaryllis* like flower, has proved hardy for several seasons in this vicinity. It blooms in October, but not profusely. It should have every advantage of soil and position, and good covering in winter. The leaf-growth, made while in flower and after, is apparently uninjured by frost.

Jamaica Plain, Mass.

B. M. Watson, Jr.

Autumn-flowering Perennial Plants.—II.

AT this time, and for some time past, a pretty specimen of *Zauschneria Californica*, the so-called Californian *Fuchsia*, has been in bloom here. It is a beautiful plant, forming a small bushy shrub about two feet high, with erect branches and drooping points. The sessile leaves are linear lanceolate, the lower ones opposite, and those on the branches are alternate. The flowers resemble those of a *Fuchsia* with exerted style and stamens; they are bright red, and are produced in loose spikes terminating the branches. The plants grown here are wintered over in a cold frame and planted out early in spring in a sunny border of a light sandy soil. This plant is apt to get long and leggy; but if the points of the young shoots are picked out once or twice during early summer it will form a neat, compact bush before the flowering season. It should be set in a sunny spot, where it will bloom early and continue until the frost destroys its blooms.

Zauschneria is easily propagated, it strikes easily from cuttings, which are taken in early autumn and wintered in a cold frame and planted into the border in April. It can also be increased by division of the old plants or by seeds. The seeds, if sown early in a little heat and grown on, will flower the same year. This plant is common in southern and lower California, and although it is such a fine autumn-blooming plant it is seldom seen in our gardens in the eastern states.

In a sheltered position, and where it is well covered over with Beech leaves in winter, there is a fine clump of *Salvia azurea grandiflora* at its best now. Few plants at this time are as handsome as this one, if well grown. Although there are many species of *Salvia* of the more tender sorts now in bloom, there are none so distinct and conspicuous as this one with its large azure-blue flowers. The plants in flower are about four feet high, and the lower part of the stem is clothed with lanceolate leaves, while the leaves on the upper part of the stem are linear. The flowers, which open in succession, are produced in spikes six to nine inches long, and last for a long time in bloom. I have seen this plant used in England as a pot-plant, and it was useful for brightening up the conservatory before the *Chrysanthemums* came into bloom. The plants used in this way were raised from cuttings in spring and grown on in pots. During the summer the young shoots were stopped once or twice, so as to make them nice, compact, bushy plants. When staked neatly and arranged in groups among other plants in the conservatory they were very effective. It is a native plant and is found growing from Nebraska to Texas and Colorado.

The plants that I have seen at different places of *Phygelios Capensis* have flowered much better than usual this season. At this time the long branching racemes of brilliant scarlet flowers are very ornamental. This is a half-shrubby plant, with much the habit of some of our *Pentstemons*, and grows about three feet high. It grows rapidly in a rich, light soil, and is increased either by division or by cuttings. It is a native of South Africa, and although not quite hardy, yet it deserves a place in a cold frame in winter, and can be planted out where desired in spring.

From August until the frost destroys its flowers in November, *Ceratostigma plumbaginoides* (*Plumbago Larpentæ*) is one mass of deep blue flowers. It is a neat dwarf plant, its wiry stems forming neat tufts from six to nine inches high. The dwarf habit suits it admirably as a rock-garden plant, and in sunny, warm borders it makes a good plant for the front row among other low-growing plants. It has stood in our rock-

garden for several winters. In some of our parks this should make an excellent bedding plant, as the colors of its flowers are so infrequently seen among this class of plants in the fall, and its foliage in autumn turns to singularly rich colors. It is so easily increased by division that a stock of plants can soon be obtained.

The Colchicums are useful autumn-flowering bulbous plants. They are very like Crocuses, and are often called Autumn Crocuses, but botanically they are far removed from each other; the Colchicum belongs to the Lily family, while the Crocus belongs to the Iris family. They are of easy culture, and should be planted in masses in late summer or early autumn. A sunny position, where they will dry up during the summer, and a light sandy soil suit them well. The most common species is *C. autumnale*, which begins to bloom about the middle of September and lasts a long time in bloom. The Crocus-like flowers appear before the leaves, and are of a pale purple color, from four to six inches high. There are many good varieties of this species, the best of them being Album, with pure white flowers; Roseum, reddish purple flowers; Striatum, purple and white flowers. The showiest species is *C. speciosum*; it has large cup-shaped flowers of a rich reddish purple color, and grows from six to nine inches high.

The Japanese Toad Flax, *Tricyrtis hirta*, is in good condition this year. As we have had no frost yet the foliage is green and healthy. Some seasons when we have early frost the foliage has a rusty appearance, which disfigures the plants. It is quite hardy here, and grows luxuriantly in a rather moist shady place and flowers profusely every season. The slender erect stems, which are terminated with curiously shaped pinkish blossoms, spotted with purplish black, are about three feet high.

Sedum Sieboldii, an elegant Japanese Stonecrop, is quite hardy here. It makes an excellent rock-garden plant when planted in an elevated position, where its semi-prostrate stems can hang over the stones, and in this way the rosy flowers, which are borne on the end of the stems, can be best seen.

Campanula pyramidalis is a strong, vigorous plant; its large pyramidal spikes of flowers rise to a height of five feet, and are a striking object when the plants are well grown. The flowers are blue or white, and as they come in succession they last for a long time in bloom. This plant has proved quite hardy here. It was planted in two different parts of the garden a year ago, and they flowered splendidly this summer and fall. I find they do best in a rather shady place, and, although they are perennials, I find they do best when treated as biennials.

The autumn-flowering Monkshood makes a good border-plant. It has stout stems three or four feet high with dark green leaves, and its bluish purple flowers are pleasing at this time.

The well-known *Anemone Japonica* and its varieties are charming and useful, and when planted in suitable positions they are among the richest ornaments a garden can possess in the autumn. A large number of perennials, such as *Delphiniums*, *Gaillardias*, *Iceland Poppies*, *Pentstemons*, *Violas* and many others, can be had in bloom in the autumn by sowing the seeds in January and planting out the seedlings into beds or borders in May.

Botanic Garden, Harvard University.

Robert Cameron.

Forcing Vegetables.

OF the many garden vegetables suitable for forcing, Lettuce, Bush Beans, Radish and Spinach are among the easiest managed. Although the last is not profitable as a market crop, the private gardener who studies the tastes of the family he supplies, generally finds a dish of fresh Spinach much appreciated about the holiday season. All four vegetables require much the same general treatment as to soil, temperature and moisture, and they can be grown in different parts of the same house. This should be light and airy, so that the crops can have all the sunlight possible. The beds, which should be well up to the glass, may be about eight inches deep. In preparing the soil a layer of about two inches of well-rotted manure should be placed at the bottom, and the remainder should be a compost of two-thirds loam and one of leaf-mold. For the first crop of Lettuce the plants should be grown in frames from seed sown in the open ground about the middle of September, and ready for planting in the beds about the middle of October. Successional sowings may be made at intervals as required from that time until March, after which time they will probably be easier managed in frames. Plant six or seven inches apart, according to the variety grown, water sparingly at first, but more plentifully as the plants gain strength, applying it only to the roots, as overhead

watering is apt to cause damping off when the water lodges in the centre of the plants. Boston Market, Big Boston and Black-seeded Simpson are all good for forcing.

Sowings of Beans, Radish and Spinach may be made in the beds at intervals as necessary from the beginning of October until March. The Early Valentine Bean, on account of its quick maturing, is, perhaps, the best all-round variety. French Breakfast and most of the turnip-rooted varieties of Radish are suitable, and the Round-leaved variety of Spinach is generally the best. The temperature of the house need not exceed fifty degrees by fire-heat at night, but it may be run up twenty degrees higher by sun-heat, and every opportunity should be taken for admitting fresh air without a cold draught. It should always be kept in mind that careful regulation of the temperature is the best precaution against mildew.

Tarrytown, N. Y.

William Scott.

Quince-trees for Ornament.—None of our fruit-trees are more attractive in flower than the Quince, and the soft gray-green foliage gives it a distinct, individual appearance all summer; in autumn its abundant golden fruit makes it a type of all that is rich and productive, so that, whether standing alone on a lawn or in a shrubbery, it is always beautiful and graceful. The so-called Apple-quince assumes rather the most graceful form as a shrub, but in a warmer climate than mine, where the Pear-quince will ripen, it is less subject to rot and remains on the tree until late October. Quinces need deep soil, and they do better if they are kept constantly mulched. If the trees are kept well pruned they will bear more fruit and be kept from that straggly form which they sometimes assume when left to themselves. The fruit can be left on until November, thus prolonging the season of the plant's beauty without injuring the fruit, which, indeed, is improved by remaining on the tree.

Clinton, N. Y.

E. P. P.

Correspondence.

The Forests of Minnesota.

To the Editor of GARDEN AND FOREST:

Sir,—The state timber-lands of Minnesota have suffered seriously from bad management. The policy of lumbermen has been to strip the timber from lands as fast as possible and cheat the state as much as they were able when paying for the timber. I mean by this no reflection upon honest lumbermen, which class is very numerous; but, as a general thing, the honest ones do not cut much state timber. The result is that the state has not received on an average over fifty per cent. of the value of the timber cut from its lands.

The state lands are cut in advance of all other lands, the small and poorer timber generally being left standing. Then, as a general thing, the land is burned over the next year if dry enough, and all the young timber left is killed. We have a magnificent school fund, and are constantly looking for chances to invest it. If these timber-lands were carefully looked after and cared for they would be an investment that, with the increase in growth, would be many times better than any other. Winds and fires might destroy some timber, it is true, but damaging winds in the thick woods are not generally very extensive, and common forest-fires do comparatively little hurt to standing Pine timber.

In considering the question of forest-fires it should be borne in mind that the valuable timber is cut off in the winter, and the following season, especially if a dry one, the fires start—sometimes kindled by lumber pirates, as they have been called; sometimes by men in clearing; many by careless woodsmen, campers and tramps, and many, too, by sparks from locomotives. These fires generally kill all standing timber that has been cut among. In two to five years, if the land is not burned over again, a young growth of Poplar and Birch come up, in many cases mixed with young Pine, which makes a young forest in six to ten years thick enough to check common fires. Very few, if any, fires are started by men who own much Pine timber. We find that state lands are mostly all burned over within a year or two after being cut over, and in such cases we almost always find that the state has been cheated by the men who have done the cutting.

I can offer no sure remedy for these things, for in these unsettled woods laws are a dead letter. The only thing I can suggest is that a very heavy fine, half to go to the school fund, the other half to the informant, might do some good. Where the country is settled, roads should be four rods wide and should be cleared of all dead and rotten woods and seeded to grass, or cultivated. Along railroads the companies should

be compelled to clear their right of way of all old ties, trees, stumps and dead wood, and either to seed to grass or have the whole strip cultivated. The companies should be held responsible for fires set by engines and section foremen. Then every man should be compelled to put out any fires he starts or sees burning, for old trees and rotten wood may hold fire for weeks before it breaks out, if not attended to.

Such conflagrations as the Hinckley fire, in Pine County, cannot be stopped by any human effort after it once starts, for the heat and smoke will kill a man many hundred feet ahead of it. The territory burned over by that fire was twenty to thirty miles wide north and south, and forty to sixty miles from east to west. On this vast area there will not be trees enough in leaf next spring to cover four hundred acres as the average of the land was covered before the fire. About all of this land was once covered with a thick growth of Pine, which had mostly been cut; perhaps three or four hundred million feet were yet standing in the eastern portion of the district. This is now dead and black as coal. Four buildings are left on this whole tract of a thousand to twelve hundred square miles. There were from 100 to 125 farmers scattered through the burned district, but not one house or rod of fence remains to show where these farms once were, and the whole territory is a vast blackened desert. Tree-seeds will have to be planted before there will be any timbergrow.

Taylor's Falls, Minn.

W. S. D.

Cephalanthus occidentalis.

To the Editor of GARDEN AND FOREST:

Sir,—During the past summer my attention was drawn to an unusually vigorous group of Button-ball bushes, at Shelburne, New Hampshire, on the farm of Mr. A. E. Philbrook. The plants form a large clump and are notable, not only for their remarkable size, but because they are the only representatives of the species within a wide area of territory.

Prior to 1865 these bushes were growing on the edge of a small pond, and were not particularly noteworthy, except that they were isolated specimens. In that year the pond was filled up in order to provide sufficient area for a barn, and in the process the bushes were buried to a depth of three or four feet. They immediately pushed their way up through the overlying sand, and have continued to make a vigorous growth up to the present time, affording a most desirable shade for the poultry. The plants now range to a height of seven feet, the largest having a stem diameter of one and one-half inches. During the past summer the bloom was most abundant; the foliage was large, dark green and healthy. The plants, as a whole, made a most attractive appearance, and suggested the possibility of the usefulness of *Cephalanthus occidentalis* for ornamental purposes.

The history of these plants certainly shows that under careful treatment this shrub may be vastly improved, and that it may become worthy of a place among those already esteemed for decorative purposes. It is quite probable, of course, that the thrifty character of these plants is partly due to their location in a poultry-yard for the past thirty odd years, and the course of treatment to be followed in the improvement of this species for purposes of cultivation may be suggested by this fact.

McGill University.

D. P. Penhallow.

Recent Publications.

The introduction to a bulletin on The Cultivated Raspberries of the United States, prepared by A. A. Crozier, and sent out by the Michigan Agricultural Experiment Station, is so interesting that we herewith present the historical parts of it in a somewhat condensed form.

The common Red Raspberry of Europe was cultivated by the Greeks and received its name, *Rubus Idæus*, from Mount Ida, where it flourished wild. From southern Europe it found its way into France, the low countries and England, and thence to the United States. The Red and White Antwerps belong to this species, and they have remained standards of excellence here for more than a century. These foreign sorts, although many of them bear abundantly large and well-flavored fruit, suffer from our cold winters and hot summer suns, and are adapted to only limited areas in this country. These defects directed attention to our native Raspberries. The Black Cap, *Rubus occidentalis*, was probably the first brought into cultivation. There is a species resembling it on the Pacific coast and the Rocky Mountains, *Rubus leucodermis*, which is quite as promising, but which as yet has furnished no variety

adapted to general cultivation. The eastern species attains its greatest abundance and development in the rich valleys of Ohio and Indiana, and more of our cultivated varieties have come from this region than from any other source. The species ranges, however, from Missouri and Arkansas into New England, and the east has furnished more early varieties, and larger and later ones have originated in the west.

The ordinary wild form of the Black Cap had come to be cultivated quite largely for market near New York city before 1850. The first distinct variety on record is the Ohio Ever-bearing, which attracted attention as early as 1832, from its habit of fruiting to some extent upon the young canes in autumn, a habit which did not increase its value for market purposes. The yellow form of this berry, represented by the Golden Cap, was introduced about the same time. The Doltle next came into prominence, and although it is a good variety, hardy and productive, it is not decidedly superior to the wild species. Eminent authorities, like Dr. Warder and Charles Downing, did not consider black caps suited for the most refined taste, and even now they generally bring a lower price in the market than the red varieties, although in Indianapolis and certain other places where black raspberries are supplied abundantly of fine quality, the demand is greater and more lasting than for the red varieties. In Boston the demand is almost wholly for red varieties, and black caps can hardly be sold.

Our native Red Raspberry has a wider range than the Black Cap, extending farther northward. It takes less kindly to cultivation, and we have few well-authenticated examples of its varieties brought into cultivation from the wild state. The evidence by which certain red varieties are classified as belonging to our native species are mainly structural, and not historical, since they have nearly all originated as chance or artificial seedlings upon cultivated grounds. That the blood of our native Red Raspberry is found largely in our most popular and hardy sorts is a fact, if fact it is, which rests mainly on circumstantial evidence. The Turner, for example, which is called a native sort, originated in the midst of many other seedlings grown on the seed of Red Antwerp. The Thwack is said to be a cross between Herstein and Brandywine, and, therefore, probably contains some foreign blood. The popular Cuthbert, usually regarded as a native species, originated in a plot of an English variety known as the Hudson River Antwerp. It seems possible, therefore, that American seedlings of European sorts and hybridization from the same foreign source may have been more potent factors in the development of our garden Raspberries than has been supposed, and that the characteristic features of the foreign species, such as lack of hardiness, small light-colored canes, numerous prickles, thick rugose leaves, may have become so far modified by cultivation and crossing that one cannot always be certain upon inspection alone as to the parentage of any given variety.

None of our popular varieties are known to be hybrids; but some promising work in this direction has been done by Brinkle, Arnold, Caywood, Burbank and others. There is an interesting group of probable natural hybrids between the native red and black species known as the Purple Cane group. Plants of this class are occasionally found growing wild where Red Raspberries and Black Caps grow. This type has been described by Peck under the name of *Rubus neglectus*, but later botanists consider it of hybrid origin from its intermediate character, its location near the two species, and from the fact that it never grows anywhere in large numbers as a true species would likely do. The plants are more vigorous and often more productive than either of their supposed parents; the canes are upright, slightly arching, generally reddish purple, with few and small spines. The plants produce few or no suckers, and, although rooting at the tips of the canes when layered under cultivation, are not known to do so naturally. The purplish fruit is tart and larger than that of either the black or red species. There are doubtful forms of this class which approach more nearly the red species, and differ from it in having darker fruit. The once popular Philadelphia is of this class. The old Purple Cane was cultivated ninety years ago in the vicinity of our eastern cities, and was undoubtedly the first American species introduced into gardens, and it remained for more than half a century the leading variety over a great part of the country. The Shaffer is another prominent Raspberry of the same group, and there are a score of others of the same general character. These varieties are superior for canning and drying, but their dull color makes them less attractive to the eye, and thus diminishes their market value. The plants, however, are hardy, vigorous, productive of large fruit and easy to cultivate.

Notes.

There is a lumber-mill in Christiana, Norway, which has a capacity of a million feet daily.

The *Gardeners' Chronicle* notes a robust variety of our native *Helianthus rigidus*, which has been named Miss Melish. This plant grows twice as high as the typical form, bears larger and often semi-double flower-heads of a rich clear yellow, which appear three or four weeks after those of the ordinary kind.

The foliage of the *Forsythia* in autumn is remarkably distinct, turning to a very dark plum color, or sometimes a dark maroon or reddish brown. This year the moist autumn has opened many of the flower-buds that had ripened early during the drought, and the deep yellow flowers, appearing together with the singularly dark leaves, make a combination as striking as it is rare.

A recent visitor to the Botanical Gardens at Buitenzorg, Java, in speaking of the astonishing growth of plants in that climate, gives as an example that some Palms of the genus *Oreodoxa*, which were planted when quite young to make a border to one of the walks, grew in five years to a height of thirty-two feet, while some species of *Albizzia* in the same time attained a height of more than sixty feet.

By an annoying oversight last week the removal of a decimal point multiplied the weight of a block of mahogany imported by Nesmith Brothers, of Greenpoint, New York, by one hundred, making it 2,166 tons, instead of 21.66. A recent number of the *Scientific American* contains an illustration of half of this magnificent piece of wood after it was sawed in two, and a good idea of its proportions can be had from the men who stand by it. Out of this half of the original stick, if sawed into two-inch plank, twenty-eight tables, each twenty-two and a half feet long and five feet wide, could have been made.

We have received a neat little dictionary of eighty-three pages in paper covers, consisting of botanical and horticultural terms, arranged in five columns on a page, the first column being the Latin or Greek words most generally used in horticulture and botany, arranged alphabetically. Opposite these, and in four other columns, are placed the equivalents of each word in French, English, German and Dutch. Something like twenty-five hundred words are thus arranged, with their synonyms, in five languages, and the book will, no doubt, prove a convenience to amateurs who wish to consult foreign catalogues, and many others. It has been prepared by A. M. C. Jonkindt Coninck, of Bussum, near Amsterdam.

Portraits of two new Plums originated by Luther Burbank are given in the last number of the *Pacific Rural Press*. One of these is named the Wickson, and is from seed of Kelsey, fertilized with pollen from Satsuma. As it ripens, the fruit turns from a deep cherry-red to a rich uniform claret color. The translucent amber-colored flesh is said to be juicy, with a striking and agreeable flavor. It has notably good qualities both for keeping and shipping. The other one is named Giant, and is from seed of Petite Prune d'Agen, pollinated with the Hungarian Prune. The plums average from one and a half to two ounces in weight, and it is larger, sweeter and finer in texture than the Hungarian. The color is dark crimson on a yellow ground, and the flesh is yellow. When it is dried it makes a handsome prune, averaging about thirty-five to the pound. These two Plums are to be distributed this year in the form of cions for grafting.

Mr. R. D. Blackmore, who is a horticulturist of note, as well as a famous novelist, writes to the *London Times* in a very discouraging way as to the prospects of fruit-growing in England. His statement is that when the apple crop of England is good the price is contemptible. One season he sold six hundred bushels at one shilling a bushel and lost his baskets. In forty years' experience as a fruit-grower he has only made both ends meet twice, and at the time when the letter was written he had hundreds of bushels of large pears lying on the ground because they would not pay for packing and transportation. It is fair to add that the great fruit show just held at the Crystal Palace was a most creditable exhibition, while the Conference Hall was crowded for three days. The temper of the discussions was by no means a gloomy one, and the prevailing opinion seemed to be that there was still a margin of profit for the fruit-grower in Great Britain.

Last year Mr. Watson, in one of his letters (see vol. v., page 486), spoke of *Richardia Rehmanni*, which was offered for sale

by some Dutch nurserymen as a rosy-flowered *Calla*, and stated that probably the same plant had already bloomed in England and showed a very slight tint of pink. The spathe was rather smaller than that of the well-known *Richardia Æthiopica*, but the leaves were lanceolate instead of sagittate, and about a foot long. A correspondent of the *Gardeners' Chronicle* now states that the plant has flowered in Kew and shows only a flush of rose inside of the upper portion of the spathe. Very plainly, the flower does not color as deeply in England as it does in Natal, but it is a distinct and pretty plant, although, unless it would color better under our bright sunlight, Americans need not expect that the plant will justify its name as a pink-flowered *Calla*. If any of our readers have flowered this plant we should be glad to have an account of their experience.

The Jerusalem Artichoke, which is the tuberous root of one of our native perennial Sunflowers, *Helianthus tuberosus*, is becoming more highly appreciated than it once was as a food for animals, because a crop can be produced in such extremely dry weather as has prevailed for the past two years, when other crops fail. A correspondent of the *Country Gentleman*, writing from Indiana, states that the yield of artichokes in good soil ranges from eight hundred to one thousand bushels an acre, which seems a large estimate. His method of feeding is to turn hogs into the field after the frost has killed the stalks and allow them to root the tubers from the ground. Part of the crop is fenced off until spring when pigs are turned in to be fattened for the early market, while quantities, which are pitted in the fall, make good food for cows, calves and colts. The variety known as White Jerusalem is the one used, and is said to resemble in color and taste the heart of cabbage. After the first planting there are always enough tubers left in the ground to produce a crop the following year.

The season for Japanese persimmons is about over, although a few small ones can still be seen occasionally on fruit-stands of the best class. During the month of September, when this fruit ought to have been most abundant, it has been impossible to find any in New York. One of the largest shippers from Volusia County, Florida, Mr. J. B. Odum, writes in reply to some inquiries that the crop in his section was a partial failure, and, although the fruit could have been shipped in considerable quantities, the prices received last year offered no encouragement to send them so far north. It is a difficult matter to get this fruit to New York in sound condition, but this trouble could be overcome if there was a sufficient demand to warrant the extra expense. Last year it looked as if the good qualities of these persimmons would soon make them common in our markets, but people are slow to try new fruits, and this really excellent one has certainly not yet secured a standing here. Mr. Odum writes that the late severe storms in Florida have badly injured the remnant of the crop which remained ungathered.

While the prices of American apples in England are about fifty cents lower per barrel than they were a few weeks ago, a brisk demand continues, notwithstanding the large quantities now going forward. Whereas prices in New York last week ranged from \$1.50 to \$3.00 a barrel, the same varieties and grades brought \$2.64 to \$5.28 in the foreign markets. In the corresponding week last year red apples brought from \$3.88 to \$6.50 abroad. New York alone shipped 20,574 barrels of apples last week against only 178 barrels a year ago, and while but 1,119 barrels had left the United States and Canada by the middle of last October, nearly 250,000 barrels have this season already left these countries for foreign sales. It is said that many growers forward their apples to Europe in preference to selling in the home markets because of the prompt settlement of accounts, payment being received by the farmer within fifteen days after the fruit leaves New York. A few Newtown Pippins from Long Island are already shown in W. & C. Smith's fruit-store on Liberty Street, and in about a fortnight these apples will be forwarded to our markets from the celebrated orchards of Virginia. In striking contrast with these small dull green apples, are the large King apples, with their stripes and splashes of crimson, and the more showy Jonathans, of roundish ovate form and deep wine color. A few Bilyeu peaches from Cornwall-on-the-Hudson sell for \$1.50 to \$2.50 for a six-quart basket. Immense Salway peaches and very large Bartlett pears from California bring seventy-five cents to \$1.00 a dozen. Seckel pears are still plentiful, but are small and attract little attention. A large supply of new crop Smyrna figs is making low prices for this fruit. Since the importing season began, about two weeks ago, 2,000,000 pounds have been received here. A few barrels of Almeria grapes have already arrived.

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The Plant Doctor.

IN the course of an essay before the last meeting of the American Carnation Society, Professor Arthur said:

We will suppose that something is wrong with the Carnation bench. There seems to be no indication of insect work, and so fungi are suspected. What next? The best plan would be to call an experienced specialist, a plant doctor, a practical vegetable pathologist, and accept his diagnosis. At present this is an unusual proceeding, but the time will doubtless come when it will be as common and thought as sensible a practice as it is now to call a doctor for one's horses or one's children.

Professor Arthur's suggestion seemed to the editor of *The Florists' Exchange* to have much pertinence, and he therefore wrote to several men of science, whose official position makes it necessary for them to study plant-diseases, and asked them to give in outline what they considered the requirements and appropriate field of a practical vegetable pathologist. The letters are so interesting that we give the central thought of each.

Mr. E. G. Lodeman, Instructor in Horticulture at Cornell University, observes that plant-diseases and their remedies do not behave in an identical manner in different seasons, and that treatments made one year will not necessarily be advantageous in other years. He, therefore, thinks that a community could profitably unite and employ a man to look after the welfare of the plants in the neighborhood, and he adds that this practice has been adopted in some foreign countries.

Professor Atkinson, Cryptogamic Botanist to the Cornell Experiment Station, also suggests that communities of growers invite a competent man to look after the health of their crops. They should fit up a small laboratory, with a microscope, spraying apparatus and a few other things, and engage an expert on a salary for the season.

Dr. W. C. Sturgis, Mycologist of the Connecticut Experiment Station, believes that florists and nurserymen might, with profit, consult a specialist who is able to diagnose the diseased conditions of plants, whether they are due to lack or excess of nutrition, to unfavorable hygienic conditions, or to attacks by fungi or insects. Having determined the cause, the specialist ought to be able to prescribe a beneficial course of treatment. Practical florists and nurserymen

might place a portion of their stock at the specialist's disposal for the purpose of scientific study. He thinks the lack of co-operation between practical growers and scientists heretofore has been due to the fact that the value of scientific knowledge has been underrated by the former class. Dr. Sturgis objects to the name of "plant doctor" as being akin to "herb doctor," which has become a term of ill repute. It may be added, that Dr. Atkinson also objects to the title, because it tends to belittle the calling in the same way that the term "horse doctor" has belittled the profession of the veterinarian.

Dr. Galloway, Chief of the Division of Vegetable Pathology in Washington, thinks that the time is rapidly nearing when the plant doctor, or, as he chooses to call him, the phytopathologist, will be quite as legitimate a factor in society as the veterinarian. Plants will always have an æsthetic and economic use, and as population increases there will be need to produce plants as economically as possible. They must, therefore, be kept in perfect health, and the work of the phytopathologist will be to diagnose and prescribe for diseases in various forms, and to study plant-hygiene in order to establish conditions for the best development of the plant. Of course, in the treatment of plant-diseases there will be the danger of quackery, just as there is in the practice of medicine, but in the matter of plant-hygiene the phytopathologist will have an important field in studying the conditions which will insure ideal plants economically considered, so that he can, in given instances, point out causes for failures and reasons for success. No man can hope to become an expert in the growth of all plants. Specialists will, therefore, have to limit their fields.

Dr. Halsted, Botanist of the Experiment Station of New Jersey, calls attention to the fact that the colleges and experiment stations disseminate so much information about plant-diseases that nurserymen and vineyardists already talk learnedly of fungi, copper salts and spraying-machines, and they begin to have some faith in the plant pathologist after he has saved a crop of grapes or pears. The botanists of the stations oftentimes save much money for fruit-growers by prescribing treatment, but the man who actually treats the tree or vine—that is, who does the spraying, for example—needs to be instructed and trained. Dr. Halsted hopes to have a man next year expert in mixing fungicides and applying them, who can go from one place to another, and begin the work of spraying and instruct farmers how to continue it. A practical sprayer who has learned the art and science of fungicidal applications ought to find a place ready. Nurserymen might be the first to ask assistance, and even now leading men in this business are looking for such an expert.

Professor S. T. Maynard, of the Massachusetts Agricultural Experiment Station, enumerates the subjects in science and practice in which a plant physician should be skilled, and they make a formidable list. When he has mastered them, however, he should be able to diagnose diseases of plants as the veterinarian diagnoses the diseases of animals, and he ought to be able to apply remedies or supply conditions by which plants may be cured and crops saved. Such a calling ought to be remunerative, for the loss by disease amounts to millions, and the doctors should be allowed a liberal percentage on the values saved. The Government is doing much in the experiment stations, but there is no reason why a disease which attacks garden crops should be treated and cured at the public expense any more than a disease which attacks animals, and, although by the knowledge of plant-diseases which is scattered broadcast over the land, the ordinary farmer will soon learn to apply simple remedies of great value, still there will always be a field for the true physician who spends his entire time in studying and curing the diseases of plants.

Professor Taft, of the Michigan Agricultural College, thinks that the increase of plant-diseases makes the vegetable pathologist a necessity. He would have a different

place from the family physician or the veterinarian, his true field being the study of diseases as they appear, with the testing of remedies and the dissemination of the knowledge thus obtained. He would, therefore, be of necessity a public officer, to whom samples of diseased plants could be sent for diagnosis, or he might be sent for at some point where there is a severe outbreak of a new disease. The experiment stations in all the states fairly fill this position now by correspondence, bulletins, etc. With the information thus obtained, every gardener may in time become his own plant doctor under ordinary circumstances, and when any new disease appears he can obtain the needed assistance from the stations.

Now, there can be no question as to the immense value of the investigations which have been made by mycologists in recent years. Many orchards and vineyards in this country, in which no fruit could be raised on account of some infectious disease, have been restored to health and productiveness, and the most dreaded foes of many field-crops have been practically vanquished. It is to the painstaking researches of botanists that the true character of such diseases as the black-knot, the apple-scab, the grape-mildew and the potato-rot has become known, and the discovered facts have been so widely disseminated, and the curative treatment of these maladies has been made so plain, that they may be fairly considered under control. There can be no doubt, either, as the years pass on, that the work of the vegetable pathologist will be of still greater importance. But, after all, it is plain that the therapeutic treatment of diseased plants will never furnish an occupation at all analogous to the practice of medicine either among men or animals. In the first place, the symptoms of plant-diseases are not so sharply defined, nor are these diseases so quickly affected by medicine as are the diseases of men or animals. A fruit-grower might never suspect any trouble with his apple-crop until it was past cure. Even if he suspected a disease he would be inclined to delay and trust to luck or the weather, especially when he can get no distinct proof to establish his shadowy apprehensions; but if his child were ill he would at once send for a physician, and if his horse were injured he would call in a veterinarian, provided the doctor's fee is warranted by the value of the horse. The veterinary surgeon may visit the horse every day, or several times a day, and make as many charges as he makes visits, and when he kills or cures his horse he can get his fee just as the physician can who treats the ailing child. But if the vegetable pathologist is called to see an orchard or a bench of Carnations he would not be expected to call again the next day and see how his patient is doing, and in this way the plant-physician could rarely make a sufficient number of calls to support him as a veterinarian is supported by a number of small fees. When a child is ill the physician is not able to carry a piece of him away for examination at leisure, for the delay may mean death; but very frequently a plant-doctor would need to carry away some material from the diseased plants for investigation. Such investigation requires a great deal of time, a well-equipped laboratory and many assistants. Most people would hesitate before they would pay a competent man for the study and work that might be required to find the disease and apply the needed remedy to a bench of Carnations or a field of Potatoes.

What might be done is suggested in some of the letters to which we have referred. The farmers or fruit-growers in a certain district might unite to employ a salaried expert to investigate and advise them just as certain large brewing companies employ a botanist on a salary to examine their yeast and see that it is pure. But there is no analogy between the position of such an expert and that of a doctor of medicine. Another suggestion is that if agriculturists and horticulturists cannot learn how to treat their plants for the ordinary diseases of crops, a class of professional sprayers could be educated in the methods of mixing and applying fungicides, but these would not be physicians, but rather nurses, who would follow out the prescription

of the plant pathologist. There seems, therefore, to be a field for these two kinds of salaried experts, vegetable pathologists and practical germ destroyers. But Professor Taft's idea that every gardener will in time become his own doctor is not a wild one. The experiment stations and agricultural colleges have taught farmers a great deal about animal husbandry, particularly about the proper rations to feed for milk or for meat or for work. From the same sources farmers have learned much about fertilizers, and it will hardly be thought that they need soil doctors to cure their enfeebled acres. In the same way farmers' sons ought to acquire sufficient skill to administer ordinary remedies to ailing plants, and surely the time ought not to be far away when graduates of agricultural colleges will be able to distinguish fungous diseases and know practically what to do for them. When a new disease or a new insect begins its ravages the stations or the colleges will always be ready to furnish the needed advice.

Corlears Hook Park.

SOME years ago an act was passed by the Legislature of New York condemning the land in this city lying south of Cherry Street and extending from Corlears Street on the east to Jackson Street on the west, and devoted it to public use as a park, which was to be known as Corlears Hook Park. This square contains nearly ten acres of land, and was originally one of the most densely populated portions of the city. After many delays the buildings have been removed and the money has been appropriated to construct a park on a design by Mr. Calvert Vaux, Landscape Architect of the Department of Parks, which we produce on page 427. It will be observed that there are entrance-gates on the east and west opposite Front Street and Water Street. Between these pairs of gates moderately direct walks have been made to take the place of the present street lines in such a way that the general movement to the east and west will not be impeded. To guard against crowding, these walks are spacious, being eighteen feet wide at the narrowest point. The broad walk near the water-front with a concourse, marked *A B*, where seats are arranged under shade-trees, is an interesting feature for visitors who use the park simply as a pleasure-ground. A large greensward area is left open in the central section of the park, and another, but smaller one, to the north of it. The borders of these areas of turf will be planted with shade-trees, such as Lindens and Elms, and seclusion from the street will be secured by lines of leafy trees, like Maples, along the outer boundaries, and among them strong-growing shrubs of such kinds as will thrive in densely peopled portions of the city. In the south-west portion of the park an area, *C C*, of somewhat oval form and one hundred and fifty feet long, has been arranged for a shaded playground for the children, and an area about the same size in the opposite corner, marked *D D*, can be used for the same purpose, if it is needed, and, if it is thought desirable, a music-stand can be erected at the point, *M*. Near the northern boundary lavatories are provided, and the upper parts of the structure, *S T*, can be arranged for use as an outlook, giving an agreeable view of the park and the river beyond. The street-trees on the surrounding curb line are about fifty feet apart, and they are arranged, it will be observed, so that there is no tree at either of the exterior angles. It has been found that trees at such angles are much more liable to injury by horses and wagons when turning corners sharply than at any other point.

The people of this part of the city are to be congratulated on the prospect of this opening among the tenement-houses with its bit of verdure. It is the only park facing the East River, with the exception of the little Rutgers Square, between Jeanette Park, which lies near the Battery, and the interesting East River Park, which is rather larger than Corlears Hook Park, and extends northward above Eighty-fourth Street. The river in front of the new park broadens out to include Wallabout Channel, so that

the water view is somewhat extensive, and it is always animated. The plan seems admirably adapted to make the most of the situation.

Native Trees and Shrubs about Montreal, Canada.—V.

SALIX NIGRA, the Black Willow, is common, usually growing in low, wet ground and the borders of swamps, ponds or streams. Though generally a small tree, or sometimes shrub-like, it is frequently found between thirty and forty feet in height and with a trunk over a foot in diameter. Its narrow, light green foliage makes it one of the most distinct of our native deciduous trees.

Salix amygdaloides, the Peach-leaved Willow, or Western Black Willow. The eastern and northern ranges recorded for this species are Cayuga and Wayne Counties, in New York state, and it is interesting to find this Willow so far down the St. Lawrence valley. In Macoun's *Catalogue of Canadian Plants*, its known eastern range on Canadian soil is given as the Red River, in Manitoba. It occurs on Montreal Island, on low ground just north of the city and at other points, and on the south shore of the St. Lawrence, and is frequent along or near the banks of the Chateauguay River for at least two or three miles from its mouth. Here there are trees thirty or forty feet high, and with trunks fully a foot in diameter. They grow with *S. nigra*, which they resemble in trunk and bark, but the much larger lanceolate dark-colored leaves, pale on the under surface, and on longer slender petioles, give them a different aspect. This Willow is probably more common than is generally known, but is passed by as some introduced species or as a form of *S. nigra*. *S. lucida*, the Shining Willow, is common in wet places, its large shining leaves making it a handsome shrub.

Salix longifolia, the Long-leaved Willow, is an interesting plant, of which some large groups are to be found along the sandy or gravelly shores of the St. Lawrence, above the mouth of the Chateauguay River. Here it is never more than a shrub, usually six or eight feet high, the stems one or two inches in diameter, and usually growing closely together and giving no hint of the arborescent habit which the same species is said to attain in the far west. *S. rostrata*, the so-called Beaked Willow, is very common and frequently assumes the habit of a small tree.

Salix discolor, the Glaucous Willow, is abundant on low grounds or in swampy places. It is one of the earliest Willows to throw off its bud-scales and expose its silky catkins, and on plants in the vicinity of constantly flowing springs these little undeveloped catkins may often be found, in the month of January, without their scale-covering. It often assumes a small tree-like form. *S. humilis*, the so-called Prairie Willow, which much resembles the last species and often hardly distinguishable from it, is usually found on drier ground. *S. sericea*, the Silky Willow, is abundant in moist places, and the closely allied *S. petiolaris* occurs with it and is often not easily distinguished. The narrow, attractive foliage of both species seems very liable to attack by a species of mildew similar to that which affects the leaves of Lilacs. *S. cordata*, Muhl., the Heart-leaved Willow, is very common and extremely variable, and seems to hybridize freely with the Silky and other Willows, thus producing many intermediate and puzzling forms.

Probably two or three other species of native Willows are to be found in this locality, especially along the south shore of the St. Lawrence. The foreign Willows are represented by the White Willow, *S. alba*, of Europe, which is very common and naturalized, and by other species.

Populus tremuloides, the American Trembling Aspen, is commonly found growing with, or in similar localities, as the small White or Gray Birch, *Betula populifolia*. It is usually only a small tree. *P. grandidentata*, the Large-toothed Aspen, is not generally so plentiful as the last species, but it becomes a very much larger and finer-pro-

portioned tree. *P. balsamifera*, the Balsam Poplar *Tacamahac*, or Balm of Gilead, as it is often called, is occasionally found in the woods, sometimes as fine large trees, with tops rising above the Maples and other surrounding trees. The different individuals show considerable variation in foliage, the leaves of some approaching those of the so-called variety *Candicans* in form. Both the type and the variety are planted for shade or ornament.

Populus monilifera, the Cottonwood or Necklace Poplar, is common, chiefly near the banks of rivers or streams, and grows to a large size, with open, broad, spreading branches. While it is, perhaps, not the largest example in the region, as fine and as symmetrical a specimen as may be seen is growing at Chateauguay Basin, near the banks of the Chateauguay River, and a couple of miles above its mouth. This tree is said to have been not much more than a sapling within the memory of some of the older inhabitants. Its trunk now measures fully eighteen feet in smallest circumference; it divides into three large limbs at fifteen or twenty feet from the ground, and the branches cover an area more than a hundred feet in diameter. The tree is staminate, and annually produces enormous quantities of pretty purplish red catkins, which are in striking contrast to the greenish yellow color of the catkins of the pistillate or fruit-bearing trees. The species bears every appearance of being indigenous, though by some thought to have been brought from the west. *P. alba*, the White Poplar or Abele of Europe, and the Lombardy Poplar have been planted, and occasionally have spread somewhat by suckers from the roots.

Pinus Strobus, the White Pine, is the common, and now, apparently, the only indigenous Pine in the vicinity of Montreal. Few large trees remain in woods where they were once very abundant, but groves of younger trees are frequent. The more local Red Pine, *P. resinosa*, seems to have been a native of this vicinity, although I do not now know of any living wild specimens.

Picea alba, the White Spruce, is the common species of its genus, and, although the original large trees have been mainly cut away, new growths are frequent. Grown singly it forms a handsome, compact, cone-shaped tree, some forms slightly approaching the Colorado Blue Spruces in the glaucous aspect of their foliage. So far I have not yet detected the Black Spruce, *P. nigra*, here, although it would naturally be expected. It may yet be found. It is generally said that these two species of Spruce may be best distinguished by the differences in their cones, but the cones of what is called *P. nigra* show great variation when compared from different regions, some of the cones at first sight hardly being distinguishable from those of *P. alba*. It seems probable that a third eastern species or distinct variety may yet be established, as is maintained by some authors.

Abies balsamea, the Balsam Fir, is common in swamps, although sometimes found naturally in drier ground.

Tsuga Canadensis, the Hemlock, is plentiful still in some localities, but great quantities have been destroyed for the tan-bark, and the tree is now in local demand for rough lumber on account of the scarcity of Pine.

Larix Americana, the Larch or Tamarack, more rarely called Hackmatack, was once abundant enough to form "Tamarack-swamps," but is now much less common, and generally found growing with many other kinds of deciduous trees.

Thuja occidentalis, the Arbor-vitæ, or Cedar or White Cedar, as it is almost universally called in this region, is common on rocky moist soils, in swamps or near water. The wood is so much sought for poles, posts, rails and other purposes that trees now are rarely allowed to grow large, but if allowed to attain maturity the rapidly tapering stems may be two feet or more in diameter near the base and fifty or more feet high. As the trunks get old the heart is very liable to decay. Young plants are often taken directly from the woods and planted for hedges in much drier ground, and thrive well if not at once exposed

to too much sun and heat. As a tree the *Arbor-vitæ* will stand well in exposed situations, as is shown by fine specimens growing on rocky banks on the south shore of the St. Lawrence at Chateaugay, facing the cold winds from the north, and at other points.

Taxus Canadensis, the little American Yew or Ground Hemlock, is common in moist places, and is most frequently seen under Hemlocks and other evergreens. It is always a low spreading shrub, never assuming a tree-like habit. While described as usually dioecious, it will be found that most mature plants bear both staminate and pistillate flowers on the same stem.

It is to be understood that the foregoing list is merely a preliminary and rough enumeration of the trees and shrubs growing on Montreal Island, or on the opposite southern shore of the St. Lawrence, intended to give an idea of the ligneous vegetation. A careful exploration and study of the flora will undoubtedly show a considerable addition to the number of woody species.

On page 393 the variety of *Cratægus coccinea* should read *macracantha*, Dudley, instead of *macrantha*, Dudley.

Arnold Arboretum.

J. G. Jack.

Foreign Correspondence.

London Letter.

STERNBERGIA MACRANTHA.—Bulbs of this beautiful species have lately been received at Kew from Asia Minor, and they are now flowering in the open border and in pots in a cool greenhouse. Imagine a *Sternbergia* with flowers as large as *Colchicum speciosum*, and colored rich golden-yellow, flaked with emerald-green, when they first open; moreover, it is likely to be as hardy as a *Colchicum* and as easily managed. According to Mr. Baker, *S. macrantha* was first described by J. Gay, and it has also been called *S. latifolia*, *S. stipitata* and *S. Clusiana*. It is a native of Asia Minor, Syria, Palestine, Persia, etc., but does not appear to have ever been in cultivation until now. The bulbs are globose, one and a half inches in diameter, with a neck six inches long, and the leaves, which are developed after the flowers, are strap-shaped and nearly an inch wide. This is a most valuable addition to hardy autumn-flowering bulbs.

APODOLIRION ETTÆ.—The genus *Apodolirion* is composed of six species of bulbous plants allied to *Cooperia* and *Anoiganthus*, and confined to south Africa. They have tunicated bulbs, with leaves and flowers not unlike those of *Crocus*, colored white or reddish. So far as I know, none of them have been introduced into cultivation until now, a few bulbs of *A. Ettæ* having lately been received at Kew from Natal, where this species is said to be rare and local. It was first described by Baker from a specimen collected in Natal and sent to Kew in 1885, the name being in compliment to a Miss Etta Stainbank. According to Mr. Baker, the flowers have a cylindrical tube three inches long, and a limb over an inch long, spreading as in *Zephyranthes*, and colored white and rose. It is an interesting little plant, and a worthy addition to the smaller favorites among Cape bulbous plants.

KNIPHOFIA MODESTA.—The specific name of this really charming plant is calculated to mislead cultivators, for it is one of the most pleasing of the smaller species of *Kniphofia*. It has linear pale green, grassy leaves two feet or more long, with smooth edges, and an erect slender spike two feet high, the upper half clothed with tubular flowers half an inch long, pure white, with conspicuous golden-yellow anthers. It was first flowered at Kew five years ago, when it was received from Natal, where it was found by Mr. Medley Wood, who described it as an elegant white-flowered *Kniphofia*. At Kew it is grown in a cold frame, where it is planted out, and is now flowering freely; it is also thriving almost as well in a south border against the wall of a heated building. I can recommend this plant to cultivators interested in rare, distinct and pretty herbaceous perennials.

DIOSCOREA MULTIFLORA.—This elegant stove climber is now flowering profusely in a stove at Kew; its long pendent shoots hang from the roof, clothed with dark green, shining, cordate leaves and elegant compound axillary tassels of small greenish flowers, the fragrance of which is suggestive of ripe peaches. The stems are annual and the root-stock is tuberous. The plant grows freely, and will be useful for training against rafters or up pillars. It is quite as attractive as the best varieties of *Asparagus*, and will probably prove of value for decorative purposes. The stems are thin and wiry, and lend themselves to such uses as twining round epergnes, etc. The species is a native of Central America and the West Indies, but the Kew plants have been raised from seeds collected in Sierra Leone by Mr. Scott-Elliot, whither, no doubt, it had been carried at some time by traders or others in communication with west Africa and the West Indies.

DENDROBIUM PHALÆNOPSIS.—There are probably more plants in cultivation of this comparatively new species of *Dendrobium* than of any other, except, perhaps, *D. nobile*. It is a magnificent Orchid, and easily cultivated if kept in a hot moist stove. Its flowers are as beautiful in form as those of *Phalænopsis amabilis*, and far more variable. Messrs. Sander & Co. continue to import it from New Guinea in enormous quantities, advertising 8,000 plants of it for sale by auction next week. It is no longer necessary to employ the varietal name *Schroederianum* for the plant, as it is the type, but showing great range of variation. It will be a good thing to reduce the name by one of its three titles, for the plant is certain to become a universal favorite, and the shorter name is better.

COMANTHOSPACE SUBLANCEOLATA.—This pretty Japanese labiate was described by Mr. Spencer Moore, in 1877, in the *Journal of Botany*; for plants of it we are indebted to Professor Sargent, who introduced it from Japan last year. It is sub-shrubby and bears terminal spikes of pretty white flowers. So far it has proved hardy at Kew, where it is now in flower. A figure of it has been prepared for publication in the *Botanical Magazine*.

EURYA JAPONICA and its variegated form are two well-known garden-plants which are popular with decorators. Their name, however, has always been open to doubt by botanists acquainted with the genus *Eurya*. Recently the variegated form flowered in a garden in Ireland, specimens of which were sent to Kew for determination. It proves to be a species of *Cleyera*, and may be *C. ochracea*.

BRITISH-GROWN FRUIT.—An exhibition of fruit at the Crystal Palace was arranged by the Royal Horticultural Society and took place a few days ago. It was a revelation of what can be done by capable cultivators in this country, even in an unfavorable season such as that now about over. The quality of the fruit was superb, probably better than can be seen anywhere out of Great Britain, the grapes, pine-apples and figs, as well as the apples, pears, peaches, plums, etc., being wonderfully well grown. It is not necessary, however, to hold such exhibitions to teach the laity that good fruit can be grown in Great Britain; that, I believe, is pretty generally understood already. But if something would be done to remedy the state of things which renders it impossible for fruit to be grown at a profit in this country, then exhibitions, such as that held at the Crystal Palace, would emphatically be worth while. At present we invite such wealthy establishments as the Queen's Garden at Frogmore, the Duke of Devonshire's at Chatsworth, the Rothschilds' at Gunnersbury and Messrs. J. Veitch & Sons, to bring collections of their best fruit to show the British public what can be done, and employ talkers to persuade the needy landowner and farmer that they can do likewise and make it pay. I am one of a considerable number who believe that fruit-growing is on a similar business basis with the production of wheat or beef in this country. The exhibitions are all very well, as also are the evidences of what can be done by skill, backed by wealth, in the way of growing fine fruit, but we advance no further in the direc-

tion of saving the industry of fruit-culture from ruin by foreign competition, nor, judging by the correspondence that has lately been published in the *Times* and other papers, does it appear likely that anything will be done.

THE FORESTRY CONFERENCE.—This meeting, held at Chiswick last week, produced an exhibition of varied interest, and a number of papers of more or less importance as contributions to the literature of the subject. Probably there was more for the gardener than the forester in the exhibition itself, consisting, as it did, of collections of all kinds of hardy trees and shrubs, many of which were new or rare; but there was not much that the horticulturist could turn to account in the papers read and discussed. Mr. Thiselton Dyer, the Director at Kew, presided at the Conference, and he did not give any encouragement to the theorists who argue in favor of forestry in this country as

New or Little-known Plants.

Cypripedium Arnoldiæ.

THIS is one of the large-flowered, short-stemmed section, showing, in this respect, the distinctive character of its seed parent, *C. bellatulum*. After the completion of its first growth, which was of unusually slow development, the plant began to show the influence of the pollen parent, *C. superciliale*, and increased rapidly in size and produced its first spike with twin flowers.

The individual flowers measure three and a half inches across. The dorsal sepal is slightly concave, of a white ground color, furnished with lines of minute purple spots, the special portion marked with a number of short pea-green lines. The petals are broad and spreading, with slight undulation, ground color rosy white, the whole surface studded with minute rich purple spots. The influence of the pollen parent in the lip is very perceptible, both in shape and coloring, the upper portion and infolded lobes being suffused with a deep rose color, which changes into a light green toward the lower portion and veined throughout with a richer shade. The leaves are elliptic-oblong, with a light and dark green tessellation.

Cypripedium Arnoldiæ (see figure) originated in the nurseries of Messrs. Sander & Co., at St. Albans, England, and has been named in honor of Mrs. Hicks Arnold, of this city. It was exhibited recently before the Royal Horticultural Society of London, and obtained a first-class certificate, and is one of the best crosses yet obtained from *C. bellatulum*.

New York.

A. Dimmock.

Plant Notes.

HABENARIA CARNEA NIVOSA.—Three years ago (see vol. iv., page 487) we figured *Habenaria carnea*, an introduction from Singapore, which had just flowered at Kew. The plant has a neat habit and large, though delicate, flesh-pink flowers. A variety with white flowers received an award of merit during the summer from the Royal Horticultural Society, and since then we learn from the *Orchid Review* that this variety, which is called *Nivosa*, has made its appearance in several other collections, and we learn that the same form has appeared in this country. It seems to grow as rapidly as the type, and both plants are admirable companions for *Habenaria militaris*, of whose rich-colored flowers it was said that no English soldier could boast a jacket of a brighter scarlet. The leaves of *Habenaria carnea* are spotted with white on a ground color of pinkish gray, but the leaves of the new variety are green and unspotted.

PAPAVER ATLANTICUM.—A new perennial alpine Poppy from the Atlas Mountains, probably a form of *P. rupifragum*, is a vigorous-growing semi-dwarf species with long, narrow, deeply cut, somewhat hairy, light green leaves. The flowers, borne singly on graceful stems one and a half to two feet high, are about two inches in diameter and of a dark orange color. They are very fugacious, but are borne in succession from early summer until freezing weather. The plant blooms the first year from seed.

THE DOUBLE WHITE COLCHICUM.—This is, perhaps, the most attractive of the species and varieties of these autumn-flowering plants. Each bulb sends up numerous flowers in succession, and they prove very interesting and attractive in the border, especially if they are planted under a carpet of dwarf Sedums or other creeping plants which will serve as a foil and preserve the purity of the flowers during rains. The double white form is much more showy and more substantial than the single white,



Fig. 67.—*Cypripedium Arnoldiæ*.

a profitable undertaking. There are large tracts of land, large for England that is, which are planted with timber-producing trees, and which serve the double purpose of protection and picturesque effect in the landscape, the sale of the timber itself being of secondary importance. Forestry is hopeless in this country, but silviculture is often worth while. It, therefore, may be that by preaching forestry to those interested in the land, they may be induced to pay more attention to the selection, planting and after-treatment of trees, which, if not likely to prove a direct source of profit nevertheless contribute largely to the value of surrounding land and to the beauty of the landscape. There is no room for forestry here; there is every need for large areas of trees and shrubs.

London.

W. Watson.

and the color is more desirable than that of the lilac or other red-tinted ones, which is, unfortunately, inclined toward bluish tones.

ASTER TARTARICUS.—The perennial Asters are growing in popularity in this country, although they are not cultivated to the extent that they are in England and in some European countries, where, together with allied plants like *Boltonia* and *Erigeron*, they are known as Michaelmas Daisies. Our native species are very largely used, and as they hybridize easily, almost an infinite number of forms has been developed, varying from a very dwarf and compact habit to a stature eight feet tall or more. Good species, however, are not all natives of America. Europe furnishes such good types as *A. acris*, *A. Amellus* and its many choice varieties. Others come from the Himalayas, others still from China and Japan. More than three years ago (see vol. iv., page 196) we described and figured *A. Tartaricus*, a robust Asiatic species, which is just beginning to come into good flower. Only a few of our native Asters are still in bloom, but *A. Tartaricus*, when planted in a sheltered position, will keep flowering in this latitude almost until December. Its flowers are large and bright purplish blue, in a huge rather open panicle borne at the top of a stem six or eight feet high. A peculiarity of these stems is that they do not begin to develop until near the first of September, when they shoot up with great rapidity above the large lower leaves, which are sometimes two feet long. A rich soil is needed to support so rampant a growth, and if the appetite of the plant is humored it will grow into a noble specimen, and its flowers, when cut, will be invaluable for large decorations in this season when outdoor flowers are rare.

MICROMERIA RUPESTRIS.—Last year Mr. Gerard made a note of this plant, which he had raised from seed obtained from Monsieur Correvon's Alpine Garden in Geneva, and which gave flowering plants the first season. While it is not in any way a striking or a showy plant, it certainly deserves attention on account of its long period of bloom and other useful qualities. A plant of this *Micromeria* with which we are familiar, and which has been growing in an open border for seven or eight years past, and has never been moved or divided, began to flower in July this year, and now, after severe frost, is showing flowers as bright as ever. This specimen is a low sub-shrub which dies to the ground every winter, but every spring numerous prostrate stems radiate from it and, turning upward at the extremities, bear spikes two or three inches long of small white flowers with lavender shadings. By September the plant covers a circle two feet across, and its habit makes it an admirable one for a low border, and particularly for a rockery. The *Micromerias* are labiate plants, and the small leaves and stems of this species taste and smell exactly like Pennyroyal. It is perfectly hardy in this latitude.

Cultural Department.

Some Hardy Grasses.

IN former years we grew *Eulalia Japonica* and its varieties in one large round bed. Early in November, last year, these were all taken up, the clumps of roots divided into small pieces and each sort separately replanted into specially prepared beds. The beds were made twelve feet in diameter, dug two feet deep, and heavily manured. The plants grew well last summer, and are unusually handsome at this time, with their large, feathery panicles of flowers. The type, *E. Japonica*, is the most vigorous grower, and its light brownish panicles are larger than any of its varieties. It is a tall, robust plant, seven to eight feet high, with graceful dark-green leaves over three feet long. The foliage of the varieties is more showy than that of the type. *E. Japonica zebrina* is a tall, handsome plant, with long arching, variegated leaves. The variegation is straw-colored and appears in transverse bands across the leaves. It is not a very robust plant, but when once established it makes an excellent bed. *E. Japonica variegata* is a pretty plant, with long graceful leaves, striped lengthwise white and green. *E. gracillima univittata* is a

comparatively new addition to this genus. It surpasses all the others for its neatness and grace. It grows to a height of four feet, and its stems are thickly covered with long, narrow graceful leaves. Although its plumes are not quite so large as those of some of the other varieties, they are, nevertheless, quite noticeable at this time.

All the *Eulalias* mentioned are quite hardy here, and are especially desirable for planting in round beds on lawns, or for use among subtropical plants in the summer garden. They are easily increased by seeds or by division, either in spring or autumn. The variegated forms are increased by division of the roots, as the plants grown from seed generally revert to the normal green-leaved type. In their native country, Japan, the *Eulalias* cover immense tracts of land. In summer, when they are in flower, they are very graceful and beautiful, and in autumn their leaves turn to a fiery-red color.

Arundo donax is a tall, striking plant, but hardly as graceful and pleasing as the *Eulalias*, yet it has quite a tropical appearance, and adds much beauty to the garden when large clumps are used. It produces annually large, thick, Bamboo-like shoots, which attain a height of ten, twelve or fourteen feet. The long canes are clothed from bottom to top with large, lanceolate, arching leaves. There is a variegated form of this plant which is very ornamental, but it does not grow quite so tall nor is it quite so hardy as the type. Its large leaves are ribboned with white, and it is valuable either as a single specimen or when planted in large clumps. The *Arundos* like deep rich soil, and they are natives of the south of Europe.

Festuca glauca, often called Blue Grass, is a charming little Grass, and very ornamental. Although it comes from the south of Europe, it is quite hardy here. Its main features as a garden-plant are its distinct blue color and dense graceful habit. The leaves are from six to twelve inches long, and have a beautiful glaucous color. The flowers are not ornamental, and should be taken away as soon as they make their appearance, as this tends to make the grass more luxuriant and bright. For edging beds, where other tall Grasses are grown, it is especially desirable, and also for the rock-garden or border when used in tufts. It thrives in light rich soil, and can be divided any time during the spring or summer to increase the plants.

Phalaris arundinacea variegata, or Ribbon Grass, is a very ornamental grass in early summer, but in autumn it is not so pretty, since its leaves then have a rusty appearance. It will grow in any soil or situation, and spreads very rapidly. It is used here largely for edging beds of tall Grasses.

Botanic Garden, Harvard University.

Robert Cameron.

Gloriosa superba.

IN a late issue of GARDEN AND FOREST, J. N. G. inquires about the proper treatment of this beautiful climbing plant from Brazil, whose very name suffices to arouse interest and make every cultivator anxious to grow it. We have had *Gloriosa superba* for four years, and ever since the first year it has flowered annually, gaining strength each year, until now the bulbs occupy a ten-inch pot, and for the past month the plant has flowered abundantly. It is most interesting to watch the development of the coloring in the flowers. When the color first appears it is almost wholly yellow, then the tips of the petals turn to a brilliant scarlet, and finally all the yellow is merged into the scarlet of the upper portions. We also grow *G. Plantii*, and have flowered it this year, but it is quite inferior to the first-named in coloring, although it flowered early in summer and is now bearing capsules of seeds that are nearly ripe. If its early flowering qualities are constant it will be worth growing for that alone. We have found that *Gloriosa* tubers are somewhat erratic in their time of starting to grow; ours seem to take a longer period to start each year, and this makes the flowering time later, so much that they will eventually become winter-blooming. We have never experienced any difficulty in growing the *Gloriosas*; they are essentially warm-house plants, requiring the highest temperature admitted in glass houses, with plenty of moisture to keep down thrips and red spiders. Thrips are especially troublesome; it is easily understood that if the young shoot gets any check it is fatal to success for the current year, as the shoots are really the flower-stems, as in the *Alströmerias* and *Bomareas*. After flowering, the pots containing the bulbs are placed in a warm corner under the benches until the time for starting them on, when they are shaken out and put in rich soil to grow again. They are repotted once when well started and fed with liquid fertilizer frequently when about to flower. With rich soil, a

warm house and frequent spraying to keep down insects, there should be no difficulty in flowering the *Gloriosas* freely.

South Lancaster, Mass.

E. O. Orpet.

MY experience may be helpful to J. N. G. concerning the treatment of *Gloriosa superba*. To commence with, the tubers should be given plenty of drainage. Fill a nine-inch pot one-third full of broken potsherds, then add a layer of rough compost, the rougher the better, then put in some good

mence to show, when more water may be given, but care should always be taken to avoid a sodden condition of the soil. The plants should be grown in a temperature of sixty-five degrees at night to seventy-five degrees in the day, with shade from the direct rays of the midday sun. After growth is completed and the foliage begins to turn, withhold water gradually, until the plants are dormant, then withhold water altogether until time to start them in the spring.

The plants are best rested in a house where the temperature

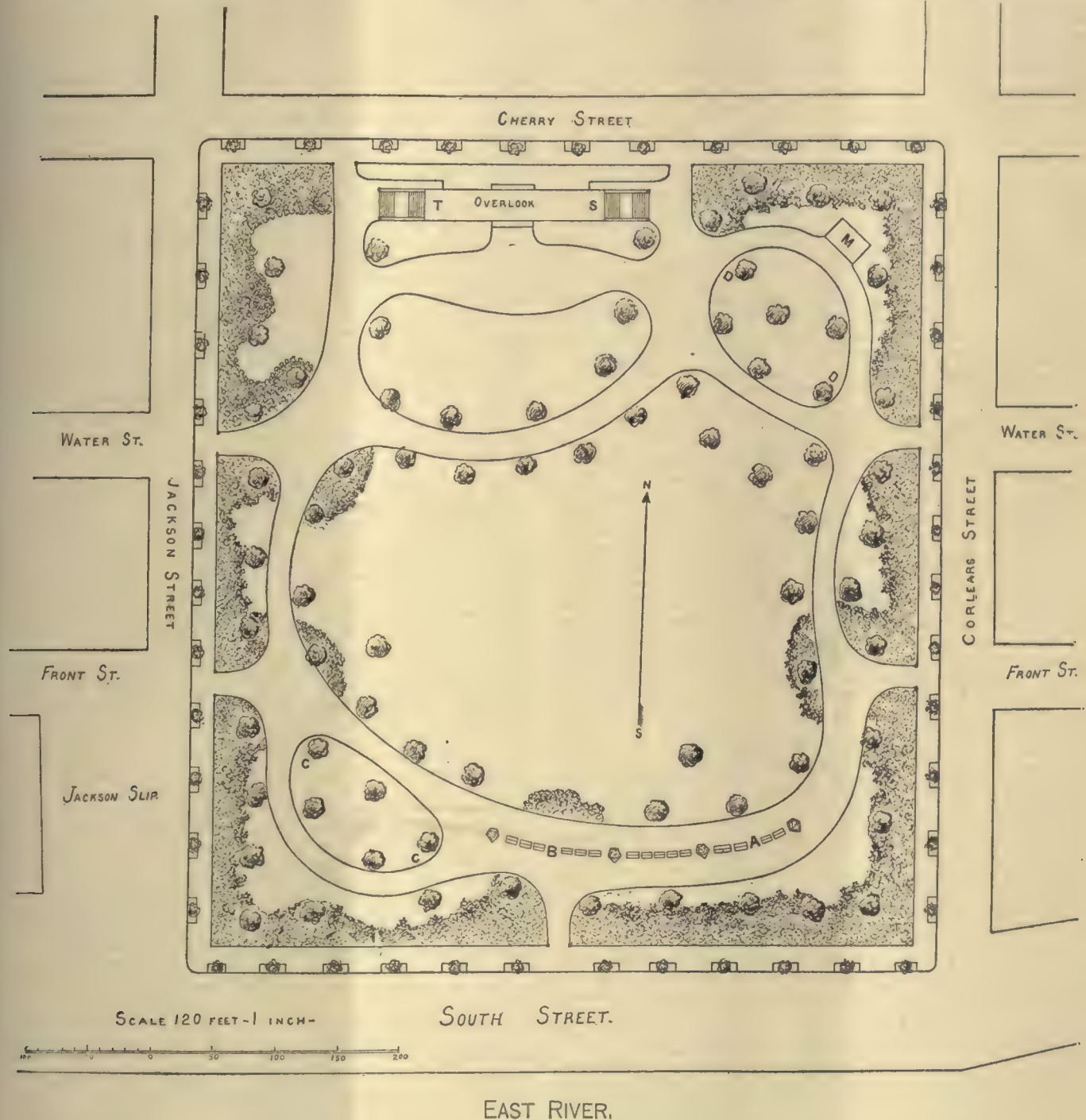


Fig. 68.—Plan of Corlears Hook Park, New York.—See page 422.

light, turfy loam; this should be hand-picked and all the loose soil discarded. With a liberal supply of clean, sharp sand the tubers should be planted deeply in the pot, and the pot then filled with the compost to within one inch of the rim. It is best to pot loosely, pressing the soil lightly with the hand. If this is done about the 1st of March, or just before the tubers commence growth, a light watering with tepid water may be given, but the soil should not be kept in a very wet condition. About twice a week will answer until the new growths com-

does not fall below sixty degrees in winter. They do not need repotting often, as the tubers are best not disturbed. Scraping off a little of the surface soil and replacing it with fresh compost is all they require. I have grown them for several years in the same soil, and never give manure in any form, solid or liquid. With plenty of syringing on bright days and a good long rest in winter, I have never seen them fail to give an abundance of their curiously twisted and bright-colored flowers.

New York.

T. E.

FOUR years ago I received a number of tubers of *Gloriosa superba* from India, and find that they flourish out-of-doors here with very little care or attention. They were tried in three different situations: (1) in high, dry sandy soil, with little humus or fertilization, but occasional watering; (2) in sandy soil rich in humus, near a watercourse and about three feet above water; and (3) in the muck of a drained pond about eighteen inches above water. In this last situation they grew and bloomed, but dwindled from year to year and were subject to disease; in the first they did moderately well and were healthy; but in the intermediate position they grow rankly, are covered with bloom all summer, and increase by abundant self-sown seedlings every year. The only care they receive is an occasional weeding and a little tying to make them cover their trellis evenly. The tubers are left in the ground undisturbed, as the winter is our dry season, though the soil where they are is always somewhat moist, and they do not start until our spring has gone and really hot weather has set in—some time in May.

Perhaps the failure with this plant, mentioned on page 408, may be due to too great drying or chilling of the tubers in winter, or the soil may not have been sufficiently porous. With us the soil-temperature is usually about seventy degrees during the growing season, and not much below that point, even in winter, a few inches below the surface. In May, when the plants start, the air-temperature ranges from sixty degrees to ninety degrees, and the atmosphere is generally dry, but the plants do not seem to be injured in the least by the excessive moisture and heat of the rainy season which make it so difficult for us to keep up a midsummer garden of any kind.

Oviedo, Florida.

Theodore L. Mead.

The Vegetable Garden.

HIGH winds, heavy rains and early frosts have combined to give the kitchen-garden a somewhat unkempt appearance of late. As soon as Lima Beans, Sweet Corn and other tender crops are cut off they should be pulled up and wheeled to the rubbish-pile without delay. We find it a good plan to save a quantity of corn-stalks, and when protecting our Strawberry quarter with a coating of dry leaves in December we spread the stalks thinly over the leaves, and thus prevent the wind from scattering the leaves about. Celery, being the most important crop now in the ground, must receive constant attention. Except for late winter crops, we have a decided preference for blanching with boards over earthing up with soil after the ordinary fashion. With the advent of colder weather soil can be banked up against the boards, while a coating of leaves over the tops of the rows, pressed loosely among the heads, will preserve them from injury. Late varieties, such as Boston Market and Giant Paschal, will need earthing several times, care being taken in all cases to perform the operation when the plants are dry and the soil not sodden. Among other varieties tested this year for the first time, Kalamazoo is the most promising, and its clean growth, fine flavor and probable good keeping qualities will commend it for trial next year. De Candolle has grown the most vigorous of any kind we have, but has rotted badly, and does not seem likely to be of any service here. Paris Market, solid white, is a good second early variety, which gives large white heads as easily as White Plume, and of equally good flavor. Cauliflowers heading in should be examined every day or two. Caterpillars must be looked after, or they will quickly spoil the flowers. Hand-picking we find the best remedy. A leaf or two should be broken down over the flowers as a partial protection from frost. As a general rule, we have no frost severe enough to injure Cauliflowers until the 10th of November, about which date we find it advisable to lift the plants not headed up into cold frames.

Brussels Sprouts will be benefited by having a quantity of the lower leaves, many of which are decaying, broken off. As this vegetable will endure greater cold than others of the Brassica family, plants need not be lifted before December. Prickly Spinach will now be making good growth; the ground occupied by it should be stirred occasionally and weeds kept down. Ruta Bagas and other Turnips will make considerable growth still, and the hoe may with advantage be run through them yet. Beets, Parsnips and Carrots will be ready for digging, taking advantage of a time for lifting them when the soil is not pasty. We find these keep admirably packed in sand and laid on the floor of an open shed, a thick coating of dry leaves being placed over them when colder weather sets in. Parsnips will keep perfectly well in the ground where they have been growing, but are more convenient if lifted and stored with the other roots. Turnips can be similarly treated later on.

Tomatoes on trellises, if they have so far escaped frost, may be kept in bearing a little longer by being protected with a canvas or other covering; other fruit should be spread on the shelf in a warm, airy shed. By this means the supply can easily be prolonged into November. Plants for winter-fruited, raised from seed sown in July, should now have their early fruit over half-swelled; an early gathering from these can be made early in November. Side laterals must be rubbed off regularly, and fertilizing of the blossoms no longer neglected if a regular production of fruit is desired. An additional sowing of seed, if made now, will give ripe fruit in March. May's Favorite, Nicholson's Hybrid, Chemin and Conference are all good kinds to use.

Lettuce, out-of-doors, when headed up, will now keep well, and a scattering of dry leaves over the plants will preserve them from injury from early frost. Where good heads are desired for Thanksgiving, the plants, if half-grown in the open, should be transferred to a frame at once, kept well supplied with water and freely aired. Later sowings should also now be transplanted into their winter quarters. Parsley may now be lifted and planted in a frame, when all but a few young leaves should be removed. Herbs, such as Thyme, Marjoram, Sage, etc., should be cut, tied in bunches and hung up to dry.

All spent and decaying crops should be removed to the rubbish heap and the hoe run over ground where any weeds are to be seen. The vegetable garden too often presents a slovenly appearance at the approach of winter, decaying crops and weeds being prominent features. Just as soon as we get our crops from the ground we commence to put manure on, and a considerable portion of it is dug over before winter, leaving the soil rough on the surface. This permits the frost to pulverize the ground more, not to speak of the improved appearance it gives to the garden. This autumn preparation helps to take off the strain on one's energies when spring work is pressing.

Taunton, Mass.

W. N. Craig.

Violets.—These plants should all have been housed and well established by this time, and possibly flowering freely for the past month, as ours have been. One of the best features of the Lady Hume Campbell Violet is that it may be brought to good condition by the middle of September every year. Violet-plants are now making a quantity of runners, and it is the custom to pick them off and throw them away, depending on those produced in the spring for the propagation of stock for next year. A better way, and one that we have practiced successfully for some years, is to save all of the last crop of runners made in the fall and to put them in flats, in a mixture of equal parts of sand and leaf-mold. The flats should be placed in a shady cold frame, where they soon take root, and where they may remain until next May—that is, until planting-out time. Several advantages result from this plan; the Violet-plants that have been kept and forced to produce to their utmost either in frames or houses are weakened thereby, and are unfit for propagation, and may be thrown away. The stock we have in frames is never subjected to fire-heat, and the plants are sometimes frozen for several weeks at a time, but this does not seem to hurt them if they are not thawed out until the weather has moderated. Cold-frame space is also of less value than that of a heated house, where all spring propagation must of necessity be carried on, and this would be quite an item in a large establishment of a commercial grower, where it is necessary to handle the young stock several times. But the principal point in favor of this plan is that the young stock is strong, sturdy and not predisposed to disease, and, as a matter of fact, we have never had any disease on plants treated in this way. I am speaking now of the newer Lady Campbell; it has long been impossible to grow any of the Marie Louise in this locality, but our plants this year are a picture of health and better than ever before. This seems to be largely due to the variety used and to fall propagation, but getting them into their winter quarters by the last of August is important. Our heavy night dews about that time favors the spread of the dreaded spot, for which there is as yet no cure, if the attack is a bad one.

South Lancaster, Mass.

E. O. Orpet.

Juneberry Success.—We are cultivating four named kinds of Juneberries, besides several native varieties, and of those which we have fruited the best is Success. It is dwarf in habit, seldom more than four feet high, and bears large quantities of large fruit. It is hardy here without protection, and has borne regularly and abundantly since it began to fruit three years ago. It is well worth cultivating in the home garden, where the fruit can be protected from birds, and I think it could be profitably grown for market. It is especially desir-

able for the drier portions of the Mississippi valley, on account of its great hardness. I do not think it would be considered of great value where Blueberries are abundant, as the latter would probably be preferred by most people. In the northern part of this state there is a Juneberry which makes a small tree, and is called Suscutan by the Indians. It has not yet fruited with us.

Experiment Station, St. Anthony Park, Minn.

Samuel B. Greene.

Tricyrtis hirta.—The rusty appearance of the leaves of this plant, spoken of on page 418, is not always caused by frost, since the plant is often disfigured before frost has touched it. It will seldom be found with perfect leaves when grown in established clumps. It is to be hoped that some of our vegetable pathologists will try to discover the cause of this unfortunate failing of a quaintly flowered plant.

Elizabeth, N. J.

J. N. G.

Correspondence.

Aquatics in Central Park.

To the Editor of GARDEN AND FOREST:

Sir,—In the Loch in Central Park, at about One Hundred and Second Street, West, is probably the largest mass of *Nelumbium speciosum* in the country. These plants are in very vigorous health, and occupy a space of not less than an acre. They are so well naturalized that it has become necessary to repress their further spreading if any clear space of this water is to be reserved. It is unfortunate that this water is so masked by trees and shrubs that it is only seen by stray visitors, and it is impossible from any point of view to enjoy the full effect of the multitude of striking flowers borne over the beautiful foliage. All the waters of Central Park, except the aqueduct, are at a low level, and the full expanse of none of them can be enjoyed except from the foot-paths. In driving, one seldom gets more than a glimpse of water, even where handsome aquatic plants are freely used.

Much use of *Nymphæas* and other water-plants is made by the New York Park Department in available spaces. Many of these are familiar in the various city basins and to the pedestrians in Central Park. Plantings of hardy *Nymphæas* are also almost hidden in the Loch. There is a fine lot of *Nelumbium speciosum* in the Harlem Mere, which is also nearly planted out from the main upper drive. The *Nymphæas*, *Devonensis*, *chromatella* and *dentata*, have been excellent this season in the fountain-basin on the terrace by the Lake; they were especially effective, as they were not crowded, and there was at all times the ample water-space about them which adds so much to the effectiveness of these plants.

Elizabeth, N. J.

J. N. G.

The Buck Bush.

To the Editor of GARDEN AND FOREST:

Sir,—It had long been a mystery to me why *Symphoricarpos vulgaris*, the Indian Currant or Coral Berry, is called Buck Bush or Buckberry Bush in Kentucky, and, in fact, generally throughout the southern states, wherever the shrub is common. One day, on a botanical excursion, my comrade, a six-year old boy, exclaimed as we were passing through a field or open wood where this shrub grew abundantly, "See the Buck Bushes! Grandpa says that the deers used to feed on them a long time ago." If deer do feed on this shrub, or its berries, or if it was ever popularly supposed they did, this would account for the name. It would be interesting to hear further from the readers of GARDEN AND FOREST, if any of them have any knowledge on this point.

Bowling Green, Ky.

Sadie M. Price.

Our Native Elders.

To the Editor of GARDEN AND FOREST:

Sir,—Will you permit me to say a word for the beauty of our native Elders, which seem to deserve a place in your "Plant Notes"? *Sambucus racemosa*, the Red-berried Elder, is seldom met with except as a wild shrub, while *S. Canadensis*, the common Elder, although sometimes seen in cultivated grounds, is not often left on account of its beauty, but sometimes for its useful properties, and generally because the owner has not found time to cut it down with other "brush." The two species side by side make a really fine show, as the scarlet fruit of *S. racemosa* is in perfection when *S. Canadensis* opens its creamy cymes. I have been struck with their united beauty when riding among the hills in Schuyler County, New York, where it is sometimes displayed against a background of

bleached and weather-beaten Pine roots that have been set up for road-fences in the early settlement of the country. These "stump-fences," as they are called, have not an attractive name, but their involved and tangled roots are always curious, and when partially draped and garlanded with vines, while flowering plants grow in crevices and pockets full of soil, they become really picturesque features of this charming region. I always feel that Elders and Sumachs are neat enough in habit for the trimmest of dressed lawns; but, perhaps, they are too common for small places, where only select shrubs are admitted, still they are always useful in parks and extensive grounds; and I always feel hurt when they are cut down along the highways. Here, at least, they should be allowed to remain as roadside ornaments.

Klinger Lake, Mich.

Dorcas E. Collins.

The Persimmon.

To the Editor of GARDEN AND FOREST:

Sir,—Some Persimmon-trees growing in great luxuriance before my windows are so attractive that I am induced to urge the more general planting of this tree in the northern states. It has, to my surprise, proved entirely hardy through the severest winters; so also have grafts of varieties from Virginia and Indiana and Missouri proved thoroughly able to endure twenty degrees below zero. The fruit is a great acquisition for our northern tables, coming in in November and December. It is said that there are varieties which ripen their fruit before frost, but, so far as my observation extends, the fruit is only agreeable after sharp frost, and then some varieties are first-rate dessert fruits. But the tree itself is beautiful in form and habit. The shade is dense and the color of the foliage is rich dark green. I did not find seedlings from fruit procured in St. Louis to be fertile. The flowers seem to be perfect, but, for some reason I am not yet able to discover, no fruit is set. It will be advisable to grow seedlings, and graft them from specially fine sorts. The Persimmon is inclined to sucker, but not in a troublesome way. The suckers coming at a distance from the tree can be utilized as stock plants if needed. I find the foliage of different sorts varies in color and shade and size of leaf, but in all cases it is dense and beautiful. The fruit, if picked before thorough freezing, can be kept in cold storage for several weeks. The foliage appears as late as that of the Butternut or later, and it is retained as late as that of the Apple. It is the only tree I know which puts out foliage late in spring and does not drop it early in autumn. The Ash, the Butternut, the Judas-tree, the Catalpas, all come late into leaf and the leaves fall early.

Clinton, N. Y.

E. P. P.

Recent Publications.

Flore Colorée de Poche à l'Usage du Touriste dans les Montagnes de la Suisse, de la Savoie, du Dauphiné, des Pyrénées, du Jura, des Vosges, etc. Par H. Correvon, Directeur du Jardin Alpin d'Acclimatation à Genève. Paris: Paul Klincksieck. 1894.

This convenient little manual of one hundred and sixty pages gives brief descriptions of 560 of the plants which the tourist is likely to encounter on the mountains of southern and south-western Europe. Of course, the descriptions are brief, but they are accurate, and they give such prominent and distinctive characters as will be most readily noticed by persons not far advanced in botanical knowledge. Besides the descriptions there are figures of 180 of the species described, figures fairly well drawn, and colored as accurately as one could expect in a cheap work of this sort; at least, the colors really help to identify the plants. These figures are generally reduced about one-third from the natural size of the plants. Besides the botanical and French, the German and English names of the figured plants are given, and all these names are very properly put in the index. Of course, this little handbook is not meant for the experienced botanist, and it makes no pretense of being a complete flora; but the ordinary tourist who cares to make a closer acquaintance with these mountain wild flowers will make no mistake if he puts it in his pocket. He may be disappointed if he attempts to identify some of the Ferns he finds, for this family is not so fully treated as most of the others, but the mountain Ferns are worth a book by themselves.

Notes.

We regret to say that by an accident the plates of the two new species of *Ilex* in the last issue of GARDEN AND FOREST were interchanged, so that the portrait of *Ilex triflora* appears as *Ilex Californica*, and vice versa.

A course of instruction in horticulture extending through the months of January, February and March, and supplemented by lectures on the chemistry of plant-life, soils, fertilizers, economic entomology and kindred subjects, is offered by the Pennsylvania State College. Such a brief tuition cannot make an accomplished horticulturist, but students who find it impossible to pursue a full college course of four years will certainly be incited by the short one to more careful study and the exercise of greater intelligence in the cultivation of plants. The institution is well officered, and the number of its students is increasing, many of them coming from neighboring states. Its post-office address is State College, Pennsylvania.

The early settlers of New Jersey were not slow to discover the peculiar value and uses of the cranberries which grow in the swampy sections of the Pines. Mahlon Stacy, writing from West Jersey in April, 1680, to his brother in Yorkshire, says that from "May till Michaelmas we have great store of very good wild fruit, as strawberries and hurtelberries, which are like our bilberries in England, but far sweeter, and very wholesome," and he adds: "the cranberries are much like cherries for color and bigness, and may be kept till fruit comes in again. An excellent sauce is made of them for venison, turkeys and other great fowl. They are better to make tarts than either gooseberries or cherries. We have them brought to our houses in great plenty by the Indians."

Some tests of insect poisons which are used largely in Alabama by Cotton planters have been made by the experiment station in that state, and one sample of what was sold for Paris green showed, upon chemical examination, an entire absence both of copper and of arsenic. Tests were applied for all the ordinary green coloring agents, without discovering traces of any of them, and finally it was shown that Prussian blue and chrome-yellow intimately mixed with each other and thoroughly incorporated with a large quantity of the commonest material, such as clay and chalk, produced a substance which corresponded precisely in color to Paris green, although it lacked the brightness of tint which characterizes the genuine article. The counterfeit can be made for about a cent a pound, and it is entirely worthless as an insecticide. High-grade Paris green frequently costs more than twenty cents a pound, so that the manufacturer of the fraudulent goods, no doubt, realized an enormous profit.

In a bulletin on the "Cultivation of Orchards," lately issued by Professor Bailey, it is stated, in relation to fertilizers, that potash is the chief element needed in the soil, particularly after trees come into bearing. This is usually supplied in the form of muriate of potash, of which some 500 pounds, or even more, may be used to the acre annually in mature orchards. Wood-ashes is also an admirable source of potash, and forty or fifty bushels of unleached ashes to the acre is a fair supply. Phosphoric acid is the element of next importance, and from 300 to 500 pounds of plain superphosphate may be applied annually to an acre. Preparations of bone, and, perhaps, the Thomas slag also, furnish phosphoric acid in available form. When lands are properly cropped, nitrogen can be obtained most cheaply for orchards by plowing under nitrogenous green manures. As nitrogen is a great promoter of growth, it should be used with some caution, for orchard-trees are grown for fruit rather than for timber.

A late bulletin from the Cornell Experiment Station states that the Apricot is already grown commercially to a considerable extent in western New York, and that the chief difficulties in the way of its cultivation are the curculio and the habit of early blossoming, which renders it liable to injury by late spring frosts. The curculio can be kept in check by jarring the trees in the same way that Plum and Peach trees are treated; while frost is best avoided by planting on high lands near a large body of water, or in some other place where cold exposure retards blooming. The Russian Apricots are somewhat harder than the ordinary type, but the fruit is small and mostly poor when compared with our standard sorts. The varieties most prized for commercial planting in western New York are Smith's Early, Harris, Early Moorpark, St. Ambrose, Turkish, Montgamet, Royal and Moorpark. The root of the Apricot itself seems to be impatient of cold wet soils, and it is, therefore, not a safe stock for grafting in central New York. Where Plums flourish the common Plum is good stock; where

the Peach will thrive this is the best stock, and the Apricot does well on it, whether nursery-budded or top-worked. As the Apricot thrives on various kinds of stock it is adapted to various kinds of soil. The cultivation, pruning and care of the Apricot are similar to those required for the Peach, and the two trees are about equally productive.

The last *Journal of Horticulture* which has come to hand contains the usual Rose analysis for the year, from which it appears that Mrs. John Laing headed the list of Hybrid Perpetuals in the number of times it was exhibited on winning stands; after which came Madame Gabriel Luizet and La France, three pink Roses. Next in order came Ulrich Brunner, A. K. Williams and Marie Baumann, three red Roses. Of the Roses introduced within six years which have made good showings in the exhibitions Gustave Piganeau, Madame Caroline Testout (Hybrid Tea), Jeannie Dickson, Margaret Dickson, Marchioness of Dufferin, Mrs. Paul, Bourbon and Marchioness of Londonderry are the most noteworthy. Among the Teas and Noisettes, Catherine Mermet still leads, followed in order by Countess de Nadaillac, the Bride, Innocente Pirola, Souvenir d'un Ami and Marie Van Houtte. Of the comparatively new Tea Roses, Ethel Brownlow, Madame Hoste, Ernest Metz, Souvenir de S. A. Prince and Cleopatra have the best record.

Eight or ten bulletins in regard to the Russian Thistle have been already issued by the Department of Agriculture and the experiment stations of Nebraska, North Dakota, Minnesota and Wisconsin, and this literature is now increased by Bulletin No. 36 of the Iowa Agricultural College, and Bulletin No. 35 from Professor Morrow, of the University of Illinois, in which last state, as well as in north-western Indiana, the imported weed seems to be already quite common. We are informed by Dr. Collier, of the Geneva Experiment Station, that the Thistle has been detected in this state about twenty-five miles south of Geneva, and in the *Country Gentleman* for last week a correspondent states that he has found it beside a highway near the Erie Railroad tracks, in the western part of New York. Of course, a weed which is so abundant in the north-west can easily be carried on railroad lines, especially those lines which transport cattle. It is now pretty generally understood, however, that this so-called Thistle, being an annual plant, can be killed if it is only cut off at the surface before it seeds. In the unfenced ranges of the west, where the plant rolls before the wind, like our Tumble Weeds, it can, no doubt, seed hundreds of acres very quickly. It is not difficult to subdue it in cultivated farms, but, after all, it is one more weed to fight, and as it is likely to become well known throughout the eastern states within a few years, it is advisable to destroy it wherever it is found. It is hardly necessary to repeat here that the plant is not a Thistle and does not even look like one. The seeds, like the flowers and leaves, are very small, and a single plant may produce as many as twenty-five thousand, and if allowed to scatter them it can infest a large area.

Considerable quantities of a few varieties of peaches are still coming from California, mainly the white Heath and Honey Cling, and the yellow Salway. They are sometimes offered in Jersey peach baskets at \$1.50, retail. A few of the late Smock peaches, from western New York, are still to be had. German prunes, from New York state, sell for \$1.50 for a six-quart basket. This large purple fruit and Coe's Late Red are the only fresh plums now in market, although some Kel-seys, Silver prunes and Gros prunes, held in cold storage, are yet occasionally seen. Some Spanish pomegranates were sold on Monday, and cases which contained 105 fruits brought from \$2.75 to \$3.25. There are a few pomegranates from California in the market, but evidently the growers of that state have not yet learned to raise this fruit successfully—that is, if we are to judge from the specimens sent to this market, which are quite inferior in appearance and flavor to the imported ones. The supply of quinces from California has been limited this season, and the large, smooth, regular fruit now offered by a few dealers commands \$3.00 a box. Pears of unusual size and beauty are now to be seen, and boxes of Easter Beurre, which average a pound apiece, can be had for \$4.00, or something like ten cents each, at wholesale. The first large sale of Almeria grapes this season took place on Monday, when 11,000 barrels were disposed of at auction. Native Concord grapes bring twenty-five cents for a ten-pound basket, and selected bunches, cut with a piece of the woody cane, cost the same price for half the weight. Wintergreen berries are more abundant in our markets this year than ever before. They sell for fifteen cents a quart-box, at retail, and the price is maintained by their increased use in the bar-rooms of the city.

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Transplanting Trees.

A CORRESPONDENT inquires whether deciduous trees transplanted after the 1st of November will live in this latitude. To which we reply that, if every needed preparation has been made and a tree is properly lifted and set, it can be removed successfully as long as the ground continues warm enough to insure the output of fresh rootlets in sufficient numbers to supply the water which is wasted from the trunk and branches by evaporation during the winter. But whether or not a tree will be likely to survive—that is, whether its chances of life barely outweigh the dangers of death in the operation of removal—is not the question which an enterprising planter ought to discuss. He will not be satisfied with a tree simply because it has vitality enough left to put forth leaves. What he wants is a tree with an unshattered constitution, a vigorous life, a promise of longevity and conditions which insure its best development in size, in beauty and in characteristic expression. Small trees can be moved successfully at any time of year by one who knows just how to do it. But in this latitude the transplanting of trees ought not to be postponed until as late as the middle of November. Certainly, no tree ought to be transplanted after this date unless the ground has been thoroughly and intelligently prepared beforehand. If trees must be dug or purchased now it is better to heel them in carefully and at once begin to prepare the place where they are to live permanently.

We have often explained why a large pit should be excavated for a tree. A wholesome tree needs a great deal of food, and it must stand in a soil whose texture will make that food available. Where trees are to be planted in groups the whole ground should be trenched to a depth of two feet, and for a single long-lived tree an excavation which is ten or fifteen feet across and three feet in depth is none too spacious. The surface-soil should be placed to one side and the stones removed from the hardpan. This subsoil should be returned to the pit, and it will be all the better if a little rich soil and peat can be mixed with it, and then the surface-soil should be placed on the top as before. During the winter all this will settle and become firm, while the action of the frost will reduce the size of the

particles. Next spring the trees can be lifted and placed in a small hole made in the centre of the large one, care being taken as the roots are covered to ram the ground tightly about them. If we wait till spring to dig these holes, or if the tree is planted in them now when they are freshly dug, the soil will settle away from the roots as the tree sways in the wind, or the rain will wash it away, leaving air-spaces about the roots, which are fatal to the tender feeding fibres already formed and which offer no encouragement for others to take their places. If the trees are properly heeled in a sheltered place to prevent evaporation, a sufficient number of roots will form to keep the branches plump during the winter; the scars, where bruised roots have been cut away, will have become calloused over, and they will suffer no shock when removed to their abiding place in spring, but will continue to grow as if they never had been disturbed. If trees are to be brought from a distance it is, therefore, better to procure them in the autumn than to wait until spring, and everything will be at hand for prompt action at a time when work of many kinds is pressing. If it is too late to secure the trees in time to heel them in while the ground is still warm and open, they should be procured at once and wintered in a cellar or pit. If they are heeled in they should be placed in a rather shallow trench and in an inclined position, and far enough apart to allow fine soil to penetrate every portion of the space occupied by the roots without leaving any unfilled interstices. The ground, of course, should be dry and well drained; no stones, clods or sods should be used in the filling, nothing but finely pulverized soil. A portion of the stems, as well as the roots, should be buried and the surface rounded, and it is better to dig a trench around the whole area occupied by the tree-roots, because mice will not be liable to push up under the snow against an inclined bank of earth.

All this is elementary counsel which has been more than once given in this journal, but the letters we receive and the half-starved sickly trees we see on every side prove that there is little danger of repeating it too frequently. Many a man who realizes the necessity of a skilled gardener to plant his flower-border, feels that any laborer who can handle a spade is competent to plant a tree. He keeps a gardener busy all the season among his flower-beds, but never dreams that a tree demands a moment's attention after it is once set in the ground. Even farmers, who know the value of care and cultivation for their crops in field and garden, will plant an orchard, leave it for years without any care, and then wonder why their unhealthy trees yield no crops of fruit. The fact is, that one tree well planted, either for ornament or use, is better than a dozen carelessly placed in the ground. The time and money spent in tree-planting is worse than wasted unless the work is done in the best manner from the very beginning, and unless the care which follows is intelligent, determined and unceasing.

Upon the details of this care it is not our present purpose to enlarge. We have over and over explained why every young tree should have room for its roots to feed; room for its branches to spread and for its leaves to catch the air and sunshine; why it should be anchored fast until its roots have taken firm hold of the ground; why its wounds should be covered to exclude fungi, which would carry death into its trunk; why the surface of the soil about it should be kept loose or mulched to guard the roots against injury by drought or sudden changes of temperature; how the rubbing away of a leaf-bud here and there in summer or the pinching of a young shoot will preserve the symmetry of the tree and prevent the necessity of more serious amputation when it gets older, with other rudimental teaching which should never be neglected. But, perhaps, novices who have already planted young trees should be reminded that this is a favorable time, just as the leaves have fallen, and before icy weather makes work among them unpleasant, to cut away limbs which chafe each other or to remove dying branches from such as seem to

be on the decline. It is a good time, too, for a walk of inspection through young plantations to mark the trees which have been overshadowed and stunted by their stronger neighbors or crowded out of shape. Such trees should be removed to give the other ones free chance of expansion, for whenever trees begin to interfere and struggle with each other for the mastery, it is best to stop the battle at once.

This may seem to be wandering from our text, but it should be remembered that transplanting is only one event in the life of a cultivated tree, and that after-care is quite as important. Of course, every precaution should be used that its vitality may receive no shock in removal, but it should be fed and made happy in its new surroundings as systematically and judiciously as if it were a growing animal, or the result will be a lasting disappointment and regret.

Climbing Plants on Boston Buildings.

PROBABLY nowhere else in this country does the service performed by climbing and clinging plants in clothing and adorning the walls of buildings receive such good illustration as in and around Boston. *Ampelopsis tricuspidata* was first domesticated here, and has so long been a striking feature of this city as to gain for it throughout the country the familiar name of "Boston Ivy." This name, however, is seldom heard here, where it is most commonly known as the "Japanese Ivy" or the "Japanese Ampelopsis."

Ampelopsis tricuspidata had probably been cultivated hereabout for several years before it became particularly noticeable, but its popularity dates back to the Centennial year of 1876. Although for years familiar with all parts of the city and a close observer of such things, I had never noticed this plant until my return in 1877, after an absence of a year or so, when I was at once struck by its prevalence. It did not become remarkably common hereabout until about 1880. Now, however, it is seen everywhere, and is even more prevalent than its cousin, our beautiful native Virginia Creeper. It has become as characteristic of our city and suburban scenes as the White Pine is of our rural New England landscape, and one of our foremost authorities once told me that he regarded it as the greatest horticultural acquisition of the century.

Occasionally its use is excessive, but its luxuriant habit is seldom encouraged to an undesirable extent. This is probably due to the fact that one of its most conspicuous services consists in the concealment, or the amelioration, of architectural ugliness, and, fortunately, the people most liable to employ it to excess are generally the ones most responsible for bad architecture. Ugly objects are so generally made graceful and picturesque by the kindly offices of the Japanese Ampelopsis that the instances of its overliberal use are usually merciful concealments. The Japanese Ivy, or, still better for this particular purpose, the Virginia Creeper, could be usefully employed to drape the electric-wire poles, whose gaunt interminable processions make hideous the highways throughout the country, and convert them, for a large portion of the year, at least, into objects of beauty, if the necessities of the linemen, with their climbing-spurs, did not forbid. This might, however, be done with poles that require no climbing, as the posts that support the trolley-wires of the electric-railways, particularly along a road that has been adorned with central-lawn spaces, like the boulevards of Beacon Street or Commonwealth Avenue.

As a means for the mitigation of bad architecture, the Japanese Ampelopsis on our Museum of Fine Arts furnishes an instructive example, though it is not carried far enough. It clambered bravely over the ugly walls of parti-colored terra cotta and brick, and for a while so nearly effaced the unspeakable reliefs of the second story as to give them the charm of indefiniteness. But the trustees have since restricted the creeper to the first story.

The excessive use of this plant finds unfortunate illustration on the walls of the home of the Somerset Club, where it was earliest conspicuous, and admired. Upon the plain, but noble, façade of whitish granite the decorative effect of the climber was at first indescribably charming, whether in the verdure of spring and summer, the brilliant hues of autumn, or the delicate tracery of its branches in winter, always showing the contrast of delicate, clinging growth against the light-toned, massive masonry. But now the rampant growth covers nearly every foot of the beautiful front, depriving the picture of the charm of contrast, and in the growing season imparting an aspect of instability to the substantial structure, particularly when the wind trembles the screen of foliage. At such times a building that is entirely covered with verdure becomes apparently as weak as its external mantle, recalling the effect of the scenery in a theatre when the actors chance to brush against it and shake its castles, fortresses and cottages.

Next door to the Somerset Club the front of a handsome old brick mansion is exquisitely draped with the different forms of foliage, and the harmonious blending and interweaving of the distinct shades of green of the Japanese Ampelopsis, the Virginia Creeper and the Wistaria. Against a background of rich old red brick the effect of the clinging and trailing growth is superb, and makes one of the best examples of verdurous house-clothing in Boston.

Probably the building most famous for its exuberant, but not in the least excessive, growth of Ampelopsis is the Old South Meeting-house, where it creeps over an enormous expanse of gray old walls and high up on the tower, relieving the severity of the Puritan architecture with its gentle touch. The suggestion of nature amid the piles of neighboring brick and stone in the heart of the business section of the town does much to heighten the charm of the Old South's garb of greenery. And this leads me to express dissent from only one point in the admirable editorial on the general subject of the use of clinging growths in combination with architecture that appeared in GARDEN AND FOREST a few months ago. The New York Post-office was instanced as one of the buildings where such a growth would not be in place. But to my mind it would be peculiarly appropriate there, for the reason that the architecture of that building is intensely offensive. If, by any means, an ample growth of Ampelopsis or any other creeping things could only be coaxed to embower a goodly portion of its façades, it would not only mitigate the inartistic character of the edifice, but it would serve to unite it with the remnant of the neighboring City Hall Park, from which its site was unrighteously taken, and in a measure atone for the perpetual affront of its existence.

"The most beautiful thing in all Boston!" is what a friend from the west once declared of the old gateway to the Granary Burying-ground, with its graceful mantle of Japanese Ampelopsis. The old burying-ground itself is a wonderfully calm and peaceful spot. There is an entire absence of the discordant features of some modern cemeteries. The modest gray tombstones of slate that are scattered over its surface seem to be a sort of spontaneous growth, as natural as the Elm-trees in whose shade they stand, and whose beauty has been remarkably improved since the thinning out which they received at the hands of the city Board of Health. The restfulness of this spot is invaluable in the midst of the hurrying throngs of one of the busiest parts of the city. It is hoped that its value from the square-foot point of view shall never tempt its conversion into building lots! The gateway of dark Quincy granite and Egyptian design, in itself is not remarkable. Its nature is symbolized by the inverted torches carved in relief on the two monoliths that form the sides. Over this structure the Japanese Ampelopsis has crept, rounding the sharp angles, draping the arch with the daintiest of leafy fringes, and all but hiding the inverted torches, though leaving in sight the flame of life at their tips—as if to deprive death of its harsh aspect by casting about it

the mantle of nature, while leaving visible life's flame with its immortal promise.

One of the few redeeming features of our extravagantly praised Public Garden is the growth of Virginia Creeper and Japanese Honeysuckle, that converts the iron fence on the western side into a beautiful hedge, and the Japanese Ampelopsis that covers some of its stone posts. This creeper would perform an inestimable service if it were allowed to clamber at will over the bad sculpture in the Public Garden and the Common.

The value of trailing growths for fences is not appreciated in this country as it should be. In Germany the Virginia Creeper is put to simple and effective use for this purpose in urban public grounds. A light, low fence is made of stakes and connecting wires; the Virginia Creeper is trained up each stake and made to form graceful festoons between. Its employment in some such fashion would do good service on a place like the Cambridge Common, for instance, now a bare, unattractive expanse, having a sort of kinship with the New England rustic burying-ground. It is surrounded by a fence composed of unhewn granite posts with squared rails of wood between. Virginia Creeper, Japanese Ampelopsis, and perhaps other twining or climbing plants, might convert this old fence into a thing of beauty. In public parks the requirement for protection of the borders sometimes necessitates guards of wire and stakes along the paths. These are often great disfigurements, and their offensive aspect, in places where they seem to be required permanently, might be at least mitigated by the use of Virginia Creeper after the German fashion.

Another climbing plant from Japan coming into marked favor is *Evonymus radicans*. While the English Ivy flourishes in places in and about Boston, occasionally growing well over a house-wall or a ledge, it is not thoroughly hardy. Even in Newport, where it seems to be well at home, it is badly winter-killed at times. *E. radicans*, being evergreen and perfectly hardy, makes a good substitute for the English Ivy in certain respects, but, like its compatriot, the *Ampelopsis tricuspidata*, it does not take kindly to every soil. It is also slow in getting a good start, and does not clamber so high as the English Ivy, but once well started it grows rapidly in good soil. It is growing luxuriantly over a corner turret of the fine Public Library in Malden, and another conspicuous example of the beautiful effect it can produce is seen in Brookline, where it has mantled a high rustic fence with an arch over a driveway. Altogether, *E. radicans* has qualities that commend it for extensive use in places where a climbing evergreen is desired. Its general introduction would do much to give interest to the winter aspect of parks and house-grounds.

The Japanese Honeysuckle and our native Bittersweet both have great merits in the adornment of house-walls, and another acquisition from Japan, in the way of a climber, is *Clematis paniculata*. With its delicate foam-like masses of white flowers, exquisitely aromatic, it has become a feature of the September landscape in various parts of the Boston suburbs. When combined with the Virginia Creeper its effect is strikingly beautiful.

Boston.

Sylvester Baxter.

Foreign Correspondence.

London Letter.

CATTLEYA LABIATA.—It is impossible to overestimate the autumn-flowering form of this plant, now so abundantly represented in gardens, where it has revealed an extraordinary range of variety in the size, form and color of its flowers. Two of the most beautiful and, I am told, most valuable yet seen were shown this week, at the Drill Hall, by Mr. Owen, of Rotherham; they were called Countess Fitzwilliam and Foleyana, the former having large pure white flowers, with the faintest flush of rose on the labellum, the latter being also pure white, save a blotch of pale purple and a tinge of yellow on the front lobe of the labellum.

Equally beautiful was a variety of *C. Warscewiczii*, named Countess of Derby, from the collection of Mr. Statter, Manchester, and remarkable in having pure white sepals and petals, the lip being of the gaudy color of the type. These three exquisite plants were awarded first-class certificates, and were looked upon with envious eyes by all Orchid fanciers who saw them.

CATTLEYA BROWNE is a new hybrid between *C. Bowringiana* and *C. Harrisoni*, raised by Messrs. Sander, and named by them in compliment to Mrs. D. S. Brown, of St. Louis. Only four years have transpired since the seeds were sown, yet the plant has pseudo-bulbs five inches high, each with a pair of leaves, and the last one bearing a single flower as large as *C. Bowringiana*, but broader in the sepals and petals, and with a flattened front lobe to the lip, the color being deep rosy mauve, with a dash of yellow on the lip. It obtained an award of merit.

CATTLEYA WENDLANDII.—This is a new Veitchian hybrid, its parents being *C. Bowringiana* and *C. Warscewiczii* (Gigas). It may be described as a large *C. Bowringiana*, with a lip like *C. labiata*, the color being rich rose-purple, with blotches of maroon and yellow on the lower lobe of the labellum. It also received an award of merit.

LELIA PRESTANS ALBA is a rare little beauty which has been known several years, but is represented only in one or two collections, Mr. Statter's being one. His plant was shown in flower this week, its flowers of the purest snow-white, with a ring-like blotch of crimson-maroon crowning the lip. This is an "albino" of superlative merit.

DENDROBIUM PHALENOPSIS ALBA received an award of merit, the flowers being large, full and wholly white, with a dash of rose on the front lobe of the lip. There were numerous other varieties of it shown, every one of them beautiful. By the bye, it is generally understood that this plant has been introduced in such large quantities from New Guinea, but I am informed on the most reliable authority that they all come from the island of Timor Laut, where the plants first introduced into this country were found by Mr. Forbes, and sent to Kew and Messrs. Veitch, in 1883. There are, however, enough plants in England now to render the habitat of the species of little import to horticulturists.

GYMNOGRAMMA VEITCHII.—This was shown last Tuesday by Messrs. J. Veitch & Sons, who suggest that it is of hybrid origin from *G. decomposita* and *G. Pearcei robusta*. I should rather call it a sport from the first-named, which it generally resembles in all points, except that the fronds are fully a yard high, and the divisions of the pinnae slightly larger than in typical *G. decomposita*, which is itself probably a sport from some other cultivated species, having been described by Mr. Baker from a plant grown in the Kew collection and of unknown origin. Another supposed hybrid *Gymnogramma* was named *G. Lathamii* in 1884, by Moore, in compliment to the Curator of the Birmingham Botanic Garden, who suggested that it was a hybrid between *G. decomposita* and *G. schizophylla*. I know no Fern which varies so much when raised from spores as *G. decomposita*. It is unknown in a wild state.

FAGUS MOOREI.—This Australian Beech was discovered by Mr. Moore, Curator of the Botanic Gardens, Sydney, New South Wales, who sent specimens of it to Kew in 1867, gathered on "high mountain slopes at the head of the Bellenger at an altitude of 4,000 feet, where it forms dense forests. It attains a height of a hundred and fifty feet, with a clear straight trunk seventy feet high, and is a very beautiful tree with rigid, dark glossy green leaves." It is in cultivation at Kew and Glasnevin, the Kew plants having leaves nearly four inches by two inches, which in texture and glossiness are more suggestive of a *Camellia* than a Beech. Coming from so high an altitude, it may be hardy in the more sheltered parts of England. I have seen *F. Cunninghamii*, also a native of Australia, perfectly happy in a Cornish garden.

PHYSALIS FRANCHETII.—This is a glorified form of the Winter Cherry, *P. Alkakengi*, and for those who attach impor-

tance to size it will have exceptional charms. At this time of year there is no more effective plant in the open border than the Winter Cherry, its branches, from one to two feet high, being profusely hung with inflated fruits like tiny Chinese lanterns and colored bright orange. For room-decoration it is a most delightful plant to cut from. The new and big-fruited species above named has lately been introduced from Japan by Messrs. J. Veitch & Sons, who exhibited it this week, when it was awarded a first-class certificate. It has been described by Dr. Masters, who, while admitting its close relationship to the Winter Cherry, rightly regards it as distinct enough to warrant the above specific name, which is given in compliment to Monsieur Franchet, the eminent French botanist, who described it in 1879 as a variety of *P. Alkakengi*. The differences between the two are as follows: *P. Francheti* is an annual with fibrous roots, erect glabrous branches with large short-stalked leaves, and "lanterns" two and a half inches in diameter, whereas *P. Alkakengi* is perennial, with semi-decumbent, setose branches, the leaves smaller, and the lanterns from one to one and a half inches in diameter. *P. edulis*, the Cape Gooseberry, is not nearly as ornamental, although probably much more useful, as yielding fruit which makes good jam, etc. It is a South American plant, notwithstanding its popular name. *P. Alkakengi* is a native of Europe and various parts of Asia. *P. Francheti* was generally looked upon as the most interesting plant shown at the last meeting of the Royal Horticultural Society. It ripens seeds freely, and its fruits are fit to eat, though, perhaps, not overpleasant when raw.

HERBACEOUS PLANTS.—An exhibition of more than ordinary interest was made last Tuesday by Messrs. J. Veitch & Sons, who are now taking up a leading position among caterers for those who delight in outdoor gardening of the decorative kind. Their collection showed what a wealth of beautiful flowers could be cut from the herbaceous border in October; it included grand varieties of *Kniphofia*, *Michaelmas Daisies*, *Rudbeckias*, *Perennial Sunflowers*, *Scabiosas*, *Pentstemons*, *Red Millefoil*, *Montbretias*, *Gailardias*, *Anemone Japonica*, red, pink and white varieties. These are all what are termed "barn-door" plants in English gardens, but they are too often left, like other "barn-door" things, to take care of themselves. Well looked after and properly cultivated they are capable of great things, as was proved by Messrs. Veitch's exhibit, compared with others I could name. The glory at this time of year of a few good gardens known to me is the *Kniphofia*, but it is generally overlooked, apparently for no other reason than because in severe winters it suffers or gets killed entirely.

THREE GOOD CARNATIONS were exhibited this week. They were *Mademoiselle Thérèse Franco*, a dwarf plant with large, well-formed, elegant flowers of a deep flesh-color. This, I believe, is largely grown in France, where its flowers find much favor with ladies; *Miss Mary Godfrey*, with a beautiful white flower, perfect in form, and having a delicious odor. The plant is a strong grower and profuse bloomer. It is regarded here as one of the very best whites; *Reginald Godfrey* is a worthy companion of the above, being quite equal to it in form and robustness of habit, the flowers being salmon-pink.

VALLOTA PURPUREA is too well known to require recommending, but it is not often grown as superbly as a plant shown this week from a garden in Buckingham. It was in a fifteen-inch pot, and bore forty-eight scapes about two feet high, with an aggregate of some two hundred open flowers. The plant had not been repotted for seven years, and never received any other food than rain-water.

DUKE OF YORK ROSE.—Messrs. W. Paul & Son are exhibiting a beautiful bedding Rose under this name, and from what I have seen of it it is sure to become popular because of its perpetual flowering character and the bright flesh-pink color of its flowers. These are borne in clusters after the style of the Monthly Rose, on almost spineless stems about a yard high. It was shown as a new Rose at

the Temple Show in June last, when it received a certificate.

CHRYSANTHEMUMS have begun again, and certificates were awarded by the Royal Horticultural Society last Tuesday to several new ones. The National Chrysanthemum Society also held an exhibition of early-flowering sorts at the Aquarium this week, and, considering the backwardness of the season, the display of flowers was surprisingly good. Most of the sorts shown, however, were those which normally do not flower so early, so that they must have been forced for this exhibition. Chrysanthemums in midsummer certainly are a novelty, but, after all, they go best with November fogs and frosts.

London.

W. Watson.

New or Little-known Plants.

A Hybrid Walnut-tree.

THE existence of some curious Walnut-trees in the neighborhood of Boston has been known for several years to students of trees in this neighborhood. My attention was first called to the fact by observing that a tree, which I had supposed was the so-called English Walnut, *Juglans regia*, in the grounds connected with the Episcopal School of Harvard College, at Cambridge, was not injured by the cold of the severest winters, although *Juglans regia* generally suffers from cold here, and rarely grows to a large size. This individual is really a noble tree; the trunk forks about five feet above the surface of the ground into two limbs, and girths, at the point where its diameter is smallest, fifteen feet and two inches. The divisions of the trunk spread slightly and form a wide round-topped head of pendulous branches of unusual symmetry and beauty, and probably sixty to seventy feet high. A closer examination of this tree showed that it was hardly to be distinguished from *Juglans regia* in habit, in the character of the bark or in the form and coloring of the leaves, and that the oblong nut, with its thick shell deeply sculptured into narrow ridges, was the slightly modified nut of our native *Butternut*, *Juglans cinerea*. Two other trees with the same peculiarities were afterwards found; one is a large widespreading specimen with a trunk diameter of four feet three inches about two feet above the surface of the ground and just below the point where it divides into three large limbs, standing in the grounds of Mr. Eben Bacon, of Jamaica Plain. This tree is supposed to have been planted between fifty and sixty years ago. The other has a tall straight trunk with a diameter of three feet one inch at three feet above the surface of the ground, and is growing on a farm near Houghton's Pond, in Milton, at the base of the south-eastern slope of the Blue Hills, where it was first noticed by Mr. C. E. Faxon. These three trees all resemble each other, and had evidently the same origin; no written record, however, tells their history, and there is nothing but their apparent intermediate character between two well-known species and their comparative barrenness to justify the belief that they are hybrids.

The figure of the flowering and fruiting branches of the Milton tree (the leaf considerably reduced), of a staminate flower enlarged, and of a nut of the natural size, appear in our illustration on page 435 of this issue. The bark of the trunk of these trees is deeply furrowed and rather darker than that of *Juglans regia*, and the bark of the branches is also darker. The branchlets, coated when they first appear with rusty pubescence, at the end of the season are glabrous, green, lustrous and marked with dark lenticels, with no trace of the brown hairs which during their first year are so conspicuous on the branches of *Juglans cinerea*. The terminal winter-buds are rather longer than those of *Juglans regia*, but resemble them otherwise in shape and in the character of their pubescent covering. The axillary buds are more generally solitary than is usually the case with Walnut-trees, an indication, perhaps, of diminished vigor, and there is no trace of the band of tomentum which on *Juglans cinerea* occupies, during the

Fig. 69.—*Juglans regia* × *cinerea*.—See page 434.

first winter, the space between the lower axillary bud and the top of the leaf-scar. In general outline, texture and summer coloring, the leaves of the hybrids resemble those of *Juglans regia*, although they are generally composed of

four, instead of three, pairs of lateral leaflets, and the leaflets are obscurely and remotely serrate, and slightly pubescent, even at maturity, on the lower surface, especially on the midribs and primary veins. The leaves

remain later in the season on the branches than those of *Juglans regia* or *Juglans cinerea*, turning bright yellow before falling, while in this climate the leaves of *Juglans regia* fall without conspicuous change of color.

In *Juglans regia* the bract which subtends the staminate flower is glabrous, or nearly so; in *Juglans cinerea* it ends in a tuft of rufous hairs, and in the hybrids this bract is made particularly conspicuous by the snowy white tomentum which covers its extremity. The perianth of the staminate flower, however, is glabrous, or nearly so, like that of *Juglans regia*, and destitute of the tufts of rufous hairs which in *Juglans cinerea* terminate its lobes. The outer covering of the female flower is beset, like that of *Juglans cinerea*, with glandular hairs, and, as in that species, it is usually divided at the apex into irregular lobes, while in *Juglans regia* this outer perianth is most often one-lobed. The fruit, which is not produced every year, and never abundantly, is about two inches long, rather longer than broad, and covered with short, rigid, rufous hairs. The nut is obovate-oblong, acute at the apex, not acuminate, like the butternut, an inch and three-quarters long and an inch and one-eighth broad, with a deeply sculptured wall rather thinner than that of the butternut, broad thin ridges at the two sutures, the two intermediate ridges so conspicuous in the butternut being only slightly developed, and a small kernel. The nut of *Juglans regia* is divided at top and bottom into four cells by the growth of two dissepiments; in *Juglans cinerea* the nut is two-celled at the base and one-celled at the apex; the single nut of the hybrid which I have examined is four-celled at the base and three-celled at the apex, thus resembling in internal structure the nut of *Juglans regia* rather than that of *Juglans cinerea*.

A large tree of similar appearance, and with similar fruit, which stood in front of Major Ben Perley Poor's mansion on Indian Orchard Farm, in Newburyport, Massachusetts, was evidently of the same breeding. There was a family tradition that this tree had been brought from Virginia during the first years of the century. In 1888, after the death of its owner, in spite of the urgent appeal for its preservation made by the papers of Essex County, it was cut down for the lumber contained in the trunk and branches. The heart-wood of this tree was light brown, and hardly to be distinguished from the wood of *Juglans regia*.

Other Walnut-trees of supposed hybrid origin are known. The French botanist, Carrière, described, under the name of *Juglans intermedia Vilmoriniana* (*Revue Horticole*, 1863, 30), a Walnut-tree which Monsieur Vilmorin planted in his garden at Ferrières, near Paris, in 1816, and which has every appearance of being a hybrid between *Juglans regia* and *Juglans nigra*. A portrait of this tree, with its history, written by the grandson of the man who planted it, appeared in this journal a few years ago (vol. iv., 51, f. 11, 22).

Carrière at the same time described another supposed hybrid of the same parentage as *Juglans intermedia pyramiformis*; and C. De Candolle (*Ann. Sic. Nat.*, ser. 4, xviii., t. 4, f. 41-43), under the name of *Juglans regia intermedia*, describes another of similar parentage which had sprung up in the garden of the Trianon at Versailles.

An immense Walnut-tree, found in 1888 by Professor J. T. Rothrock on the Rowe Farm, on the north bank of the lower James River, in Virginia, and described by him in *Forest Leaves* (ii., 133, f.), has the habit, foliage and general appearance of *Juglans regia*, and produces a nut which is not unlike that of the Black Walnut, although it is longer and less deeply sculptured. Of the history of this tree nothing is known. When measured by Professor Rothrock it had a trunk girth of twenty-four feet eight inches, six feet above the surface of the ground and above its greatly swollen base, and its longest branch extended sixty-seven feet from the trunk. Curiously enough, the nut of this tree exactly matches the figure of a walnut described by Carrière as *Juglans regia gibbosa* (*Revue Horticole*, 1860, f. 21-23), produced by a tree raised by a nurseryman at Fontenay-aux-Roses about 1848, from a nut which was sup-

posed to have come from America. Professor Rothrock heard of what were described as similar trees on plantations along the James River; and a young tree growing near his large specimen suggested to him that this hybrid, if it is a hybrid, produces fertile nuts.

In California, Mr. Luther Burbank, in whose skillful hands the art of hybridizing has produced some wonderful results, has obtained two hybrid Walnut-trees by crossing *Juglans regia* and *Juglans nigra* with *Juglans Californica*. The first of these hybrids is remarkable for its vigor and growth, the size of its leaves and its habit. "Budded trees," Mr. Burbank affirms, "six years of age, under the same conditions, are fully twice as large, broad and tall as Black Walnuts at ten, or Persian Walnuts at twenty years of age. Twelve to sixteen feet growth per year is not unusual, thus the hybrid grows twice as fast as the combined growth of both its parents. The leaves, which are from two feet to a full yard in length, are clean-cut, glossy, bright green, having a surpassing sweet odor resembling that of fragrant apples, and as powerful and peculiar as that of roses or lilies." The second of these hybrids produced abundant crops of nuts of large size and excellent flavor, and promises to be a valuable fruit-tree. C. S. S.

Plant Notes.

ABELIA RUPESTRIS.—A correspondent who has been admiring this shrub in Washington, where it is planted quite abundantly in the Capitol grounds, inquires why it is not more generally used. A sufficient reason is that it is of doubtful hardiness at points much farther north. Mr. John Saul discovered that it was perfectly hardy as much as twenty years ago in Washington, and, perhaps, with protection, it would survive the winters in the latitude of New York. Mr. Joseph Meehan says that the tips are cut a little during some hard winters in Philadelphia, but this does not happen often. Even in England it does not everywhere endure the climate, unless it is planted under the shelter of a wall or in some other protected situation. Where it will endure the climate it is a most attractive evergreen shrub, with small glossy leaves and delightfully fragrant white blossoms, shaped like little trumpets, and tinged with a very faint purplish red or pink. These flowers begin to appear by midsummer and are borne abundantly for many months. The plant, when carefully pruned, makes a compact little bush, with gracefully arched branches. It is by no means a new plant, having been introduced from China fifty years ago.

IPOMEEA LEPTOPHYLLA.—Some roots of this perennial Morning-glory which have been displayed in the windows of a seed-store in this city have attracted much attention lately by their curious shape and immense size. The plant seems almost unknown in eastern gardens, but Mr. Andrew S. Fuller, who has grown it in his garden in New Jersey for a long time, and who is familiar with it in its home in our dry western and south-western plains, writes of it as follows: "It grows and thrives where rain is always uncertain, and sometimes where little or none falls during a period of from one to three years. But, while these long droughts continue, this dwarf Morning-glory throws up sturdy stems three or four feet high, with branches which droop gracefully and bear numerous large pinkish purple flowers three inches long and fully as wide, which open as the sun rises during several weeks in summer. The leaves are long and slender, which give the plant its specific name. How the plants live and flower in the cool dry regions of the far west is no longer a mystery when we attempt to dig one of them up. First we find a slender stem-root not more than an inch in diameter, which extends downward from five to ten inches, then there is a sudden enlargement as we reach the tuber proper, and this assumes various fantastic shapes, either growing in a single mass or forking into two or more branches, but each one invariably extending down into the hard adobe soil three or four feet, and so becoming a magazine of stored up plant-

food, to be drawn upon when needed. How large these roots may become when the plant is fifty or a hundred years old I do not pretend to know. In Gray's *Manual* it is stated that they sometimes weigh a hundred pounds. Those I have raised from seed in New Jersey have weighed about twelve pounds at the age of twelve years. If by accident the crown is broken off or killed, new buds soon form below, and it is quite possible that every part of the surface of the root is capable, under favorable conditions, of producing adventitious buds in any number." As an ornamental plant Mr. Fuller considers it well worth attention.

CUPHEA LLAVE.—A few years ago the late Sereno Watson sent two seeds of this plant to Mr. W. A. Manda, with a statement that it is a native of Central America. From these seeds the stock was secured which was afterward distributed by Messrs. Pitcher & Manda, and which has since been sold by some other nurserymen under the name of *Cuphea tricolor*. It somewhat resembles the so-called Cigar-plant, having tubular flowers which are nearly two inches long and which show a singular combination of color, being dark purple, bright scarlet and greenish white. It is of low habit, and has proved admirable for edgings where a growth of not more than a foot in height is needed. In Forest Hill Cemetery a line of these plants set around the basin of a fountain, where they are just large enough to droop over the low stone coping, is very effective. The plant is of compact growth; it blooms incessantly; the foliage is clean, and, altogether, in color and habit, it is suitable for vases and seems exactly to fit a situation where low herbaceous growth is wanted.

SCILLA LINGULATA.—This and its white variety, which are now flowering with Mr. Gerard, are Algerian plants, interesting as the latest ones of the genus to bloom. The flowers are small, campanulate, blue or white, not showy, and borne to the number of six to twelve on a scape three inches high. They are not valuable garden-plants; from the lateness of their flowers they will require protection, and will probably often miss flowering, owing to the difficulty of ripening their bulbs properly during our winters, when space under glass is valuable, and sunny locations can be put to better use.

Cultural Department.

Saving Seed.

SEED-DEALERS generally take precaution to keep their stock pure by careful selection, and, as a rule, farmers and gardeners will find it better and cheaper in the end to buy seed of a reliable seedsman. When care is taken in selecting, however, and seed is carefully preserved for a series of years, a good strain can be secured, which will probably give increased yields of better quality. Professor Taft, in writing for the *American Agriculturist*, gives the following directions for collecting and caring for seeds:

A series of sieves is useful both for seeds with a dry covering or pod and those formed in a fleshy fruit. Three sizes are used for each size of seed: a coarse one, to remove the larger stems, leaves, etc.; one that is just large enough to allow the seeds to pass through, and a third so fine that the seeds cannot get through, but which will allow of the removal of the dirt and lint. If large amounts are to be grown, a flail and fanning-mill will be desirable. When most of the seeds are ripe, the stems are cut off, or in some cases the entire plant is pulled. If the seeds do not ripen evenly, it is sometimes necessary to make several cuttings. In case they shell readily, the stems are placed upon papers or cloth sheets, and left in the sun until dry enough to thresh. This is done with the flail if large quantities are to be threshed, but small amounts can be rubbed out with the hand, using a coarse sieve if it is available. The seed should then be cleaned, using the fanning-mill for large quantities, or by pouring them upon a sheet and allowing the wind to remove the lighter particles. The final cleaning can be given by passing them through the sieves, although, if these are not available, good work can be done by washing them, as the good seeds will settle to the bottom, while the light ones will float. Whatever method is used, the seeds should be thoroughly dried before they are placed in bags.

When the seeds are in fleshy fruits they should be ground or mashed and placed in barrels or other receptacles to sour. In the case of cucumbers, melons, etc., the interiors only are scraped out. In from thirty to one hundred hours fermentation will have advanced sufficiently to admit of the ready separation of the pulp from the seeds. The mashed fruit is placed in coarse sieves and suspended in tubs of water. The seeds will drop to the bottom, while the light pulp will float and can be thrown out; they should then be sent through a finersieve, and after three or four washings can be taken out, spread upon cloths and dried. It is well to wring many seeds in cloths and thus remove the surplus water. Many persons do not take the trouble to wash out the seeds, when growing a few for home use, merely scraping them out upon a piece of cloth and drying them in their pulp. Most of our vegetable seeds keep best, after being thoroughly dried, in a moderately warm, dry place. Paper or cloth sacks will answer to hold them if hung up or placed in boxes, where mice cannot get at them. The seeds of our fruits and nuts, however, would give a very low germination if treated in this way, and care must be taken that they are not exposed to drying influences for any length of time. They may be planted at once after they are gathered, or, after being partially dried, they may be placed in thin layers in a box of sand. This stratification prevents the loss of water, and they will be in good condition for planting in the spring. It will be found desirable—especially with the fruits—to place the boxes out-of-doors during the winter, and thus expose them to the action of frost. In the case of the Peach and other stone fruits, it is often well to crack them with a hammer if the frost has not done its work.

Indoor Work in Autumn.

THE work of lifting, potting and storing tender plants that have been used for outdoor ornamentation during the summer is now finished, and intelligent care given to the indoor garden now will prevent disappointing results later in the season. Caladiums, whose brilliant leaves have contributed so much to the adornment of the conservatory during the summer, will now be ripening their growth, and this process may be hastened by withholding water from them for a time, and turning the pots over on their sides beneath the staging in a warm greenhouse. After the leaves are all gone a neat method is to shake out the tubers from the soil in which they have been growing, and to place them in pans or boxes of dry sand; these should be kept in a warm and tolerably dry place until the following spring, the object being to keep the tubers plump and sound without making a premature growth during the winter.

A similar plan can be used for *Gloxinias*, *Tydæas*, *Gesneras* and *Achimenes*, all of which can be stored in dry sand for the winter, though the delicate rhizomes of the *Achimenes* must be carefully shaken out, for they are easily broken.

The beauty of the floral display during the winter and spring is greatly increased by the use of some *Pancratiums*, *Crinum*s and hybrid *Hippeastrums*, all of which can be brought into flower at stated periods by using a little judgment in resting the plants. For this purpose the bulbs should not be so dried off that they lose all their leaves, as these plants are not necessarily deciduous; but a smaller supply of water should be given for a time, while the plants have full light and a lower temperature. Another point to be remembered is that frequent repotting is not required for most of them, and after they have grown to flowering size an occasional top-dressing and some liquid manure will carry them through for two or three seasons, providing the plants are healthy to begin with.

Eucharis Amazonica, another evergreen bulbous plant, does well with judicious treatment. With the resting periods properly regulated, two to four crops of flowers may be secured in a year, one of which can be timed for the Christmas season.

To have flowers of *Lilium Harrisii* at the holiday season, the plants should be grown so that the buds show at least six weeks before the time when the flowers are desired.

Tulip bulbs are received at about this time, and they should at once be planted in the pots or boxes in which they are to bloom. Without a good root-growth the flowers will not amount to much, and the same rule applies to most of the spring-flowering bulbs.

The propagation of various stove plants is now in order, and this is a good time to begin getting up a stock of *Crotons* for next season's bedding and for other decorative uses to which these beautiful plants are so well suited. The past season has been highly favorable for outdoor *Crotons*, at least in the eastern states, and the use of these plants out-of-doors will, no doubt, be more general next season. *Crotons* usually root

quickly if they are not allowed to become very dry, and the foliage and, in fact, the whole cutting will be invigorated if allowed to stand in water for an hour before it is planted in the cutting-pot. It is the small details of practice such as this which count in the management of an establishment, and which are worth remembering.

Mignonette for winter-cutting should now be showing bloom. If grown in pots it will stand a reasonable amount of manure-water and be helped by it. The finest spikes of Mignonette are generally produced from plants that are set out in a bed, but to secure the greatest size it is needful that the plants be watched and skillfully disbudded, so as to throw the full strength of a shoot into one spike.

Holmesburg, Pa.

W. H. Taplin.

The Linarias.

AMONG the meritorious hardy herbaceous plants in bloom at present are a few of the numerous species of *Linaria*. They combine profusion and continuity of bloom, being literally covered with flowers from early summer until severe frosts, with the exception of a slight resting period during the middle of July. They are admirably adapted to withstand drought and neglect, to which many plants easily succumb. They have a tendency to produce seed very soon after they begin to flower, especially during drought, if they are not artificially watered; but, with ordinary vigilance in removing the ripening capsules, no more unique or satisfactory flowering plants are found in the herbaceous borders at this season.

The genus consists of over one hundred species, many of which show a marked variation of color in their flowers, especially when grown in soils of different composition. After the first season the biennial and perennial sorts display more intense shades of color and larger flowers, a more healthy deep green color in the foliage and a thriftier habit in general. When planted in early spring in a good, stiff, fibrous loam, and exposed to the full sunlight the entire day, they thrive exceedingly. Light soil and summer planting are not recommended. They are very easily propagated by seed sown in a porous, fibrous loam in March or April. The young plants should be pricked out into pots as required, and not allowed to become pot-bound. In early spring they should be planted out when sufficiently hardened off and as soon as the soil is in proper condition. This method is preferable to fall-sowing in the open ground and protection during the winter.

Pre-eminent in the genus is *Linaria Hendersonii*, var. *ericoides*, a sturdy, dense grower, bearing a profusion of racemose, rich, light purple flowers from three-eighths to half of an inch in length, with the spur included. The upper and outer surface of the corolla is of a deeper shade than the inner, and is striated with long, narrow and dark stripes. The spur, lower surface of the corolla-tube and three-lobed lip are lighter than the upper surface of the corolla-tube, and devoid of any prominent markings. The light green leaves are disposed in whorls of four and five at the base, becoming alternate as they approach the apex, linear-lanceolate, acute, glaucous, sessile, one-half to one inch long and one-eighth to one-quarter of an inch broad. The plants average from six to twelve inches in diameter and seven to thirteen inches in height.

Linaria purpurea is a close rival of the variety just named, differing from it in that the whole corolla and spur are striated; a somewhat regular network of dark streaks is plainly visible on the inside of the petals, and the palate has a denser and longer beard. The main difference, however, is its height, which is from two and a half to four feet, with a proportionate diameter of from twelve to fifteen inches. The whole plant is completely covered with bloom, equally distributed from an average of ten inches from the soil to its summit. Although the flowers vary considerably in color, they are generally a shade darker than those of *L. Hendersonii*. The foliage is linear, one and a half inches long, acute and glaucous. If this species is not given full sunlight it flowers sparingly, grows spindlingly, and soon assumes an oblique or weak habit, which makes the objectionable practice of staking necessary. Groups of this species three or four feet in diameter and bordered with one or two rows of *L. Hendersonii*, var. *ericoides*, make admirable additions to a landscape when properly disposed. The absence of any objectionable characteristics, such as dying down in early summer and straggling growth, renders its use in bold and prominent situations altogether safe and satisfactory. Its flowering season continues from the latter part of May until severe frosts, with the exception of the July rest. It is doubtfully perennial.

Linaria repens is a perennial of a weak habit; the stems are usually loosely arranged and decumbent; the leaves are

slightly larger than those of *L. purpurea*, soft in texture and glaucous. Unless the plant is well established early in the season the small light purple flowers are sparingly produced, but its most objectionable feature is its weak constitution. It grows from five to ten inches high and eight to sixteen inches in diameter, with an unsymmetrical form.

Linaria genistifolia is of a fairly sturdy habit, quite dense, and an excellent bloomer. Its foliage is from one to three quarters of an inch broad and three-quarters to two inches long, thin, concave, glaucous and usually three-nerved. The plant grows from eight to twelve inches high and ten to twelve inches in diameter, and occasionally displays a tendency to be decumbent. The large, pure, pale yellow flowers, with the exception of the straight, gradually tapering spurs, are more *Genista*-like than is its foliage, though this would hardly be surmised from its specific name. The plant is perennial.

Linaria supina is a large yellowish flowered perennial species, with an extra-long curving spur and a large erect upper lip. The leaves are one-fourth of an inch broad and one-half to one inch long. The short pedicel and variable blooms develop along an extremely short inter-noded rhachis, which causes it to assume a cluster-like appearance from a short distance. The flowers are not as pure in color, and are often tinted with orange in the throat; the plant is neither as dense nor as sturdy as *L. genistifolia*.

Linaria biennis detests the sun's rays, and in this particular is an exception to the genus. The foliage is sickly, pale-looking and dry throughout the season, even if placed in northern exposures, so that this species is not an attractive one.

St. Louis, Mo.

Emile Mische.

Notes from Baden-Baden.

AMONG *Kniphofias* of recent introduction *K. pauciflora* deserves special notice. It is a dwarf plant, somewhat like *K. Macowanii*, has grassy foliage, and forms a bush; from this the numerous flower-spikes rise to two feet, showing about thirty medium-sized flowers of a bright citron-yellow color in a gracefully nodding or pendent position. Its principal flowering time is May, but it flowers for a second time in September. I consider this a very desirable acquisition. *K. Nelsoni*, of which Mr. Nelson speaks with enthusiasm, is very similar to *K. pauciflora*, but its color is said to be an indescribable scarlet. Owing to the cold rainy weather which has prevailed in middle Europe for two months past it is only now throwing up its flower-spikes.

Colchicum giganteum is another novelty now in full glory. There are as many as six flowers from one bulb; they resemble those of *C. speciosum*, but are of a better shape, more massive and of a deeper color. Among autumnal *Crocuses*, *C. speciosus*, var. *Aitchisoni*, takes first rank, the very large flowers having a delicate lilac color.

Among shrubs, *Cratægus Korolkowi*, syn. *C. Tartarica majus*, is a striking object; the small tree has beautiful dark green massive foliage, hidden by the large bunches of big crimson-colored fruits, each of which is of the size of a *Myrobatan* plum.

Baden-Baden.

Max Leichtlin.

Forcing Strawberries.

STRAWBERRY-PLANTS, in pots for winter forcing, should now be kept rather dry to induce them to rest. Before severe frosts the pots should be plunged their entire depth in ashes or sand to prevent their being cracked by frost. If an early crop of strawberries is desired, the plants may be put in the greenhouse to start slowly early in November; but it is better to leave the plants out-of-doors a month longer, or until they have been well frozen through, as they are then more easily forced. When taken inside, the plants should be placed in a light house, not more than eighteen inches from the glass; if the benches are much further from the glass, temporary shelves should be erected for them. They should be started slowly at first and watered sparingly until their growth is well begun, when the supply of both heat and water should be increased. A night temperature of forty-five to fifty degrees is quite sufficient at first; this should be increased eventually to sixty degrees. A rise of about fifteen degrees on bright days should be allowed. The atmosphere should be well charged with moisture to keep down red spider, which is always a ready enemy to Strawberries. When the plants come into flower artificial impregnation is generally necessary; a small camel's-hair brush is very useful for conveying the pollen from the stamens to the pistil; if possible, a bright day should be chosen for the operation, when the pollen is

dry. Care should also be taken at this stage not to wet the plants overhead. When the fruit is well set it should be thinned out to about twelve fruits to a plant, which is a sufficient crop to a six-inch pot, and this is the best size for general use. Occasional applications of weak liquid-manure will greatly assist the development of the fruit.

Tarrytown, N. Y.

William Scott.

Correspondence.

The Persimmon.

To the Editor of GARDEN AND FOREST:

Sir,—I quite agree with E. P. P. (in your issue for October 24th) as to the value of our native Persimmon, whether cultivated for its fruit or merely for its picturesque and ornamental effect as a tree. I have grown the Persimmon on Long Island for twenty years, and have tried varieties from several western and southern states. The best tree I have is one given me by the late William Cullen Bryant in 1867. Mr. Bryant was an enthusiastic cultivator of Persimmons, and he had great faith in their future development and improvement, and he even believed they would become formidable rivals of the Kaki, or Japanese Persimmon. The particular tree of which I speak was one of many obtained from seed which grew in the southern Ohio valley, and Mr. Bryant considered it superior to any from Missouri or elsewhere.

My tree has been generously cultivated and root-pruned. It is now fifteen feet in height, and produces fruit measuring five inches in circumference. In proportion as the fruit is improved its astringency diminishes, the pulp increases in volume and sweetness and the seeds diminish in number. This is also true of the Japanese Persimmon, the largest and finest specimens of which often have no seeds at all.

One male tree is sufficient for a large Persimmon plantation. The male tree holds its leaves longer than the female, and it is still fresh and green (October 25th), while the female trees are already bare.

Mr. Samuel Miller, of Bluffton, Missouri, Vice-President of the Missouri State Horticultural Society, and an experienced grower of this fruit, has recently sent me fruit of six varieties, all differing in size, shape and flavor, but all of excellent quality.

Flushing, L. I.

J. W. B.

Birds which Injure Apples.

To the Editor of GARDEN AND FOREST:

Sir,—In the note by Mr. Fred W. Card, on page 414 of your issue for October 17th, on birds injuring apples in Nebraska, the common crow is not mentioned. This bird is often troublesome in eastern orchards. In the autumn, when the crows congregate in considerable numbers, and usually frequent open fields and pastures, they destroy large numbers of injurious insects; but they also sometimes betake themselves to Apple-orchards, and in a short time will destroy the market value of large quantities of the finest fruit in the tops of the trees. Generally a deep hole is pecked in the uppermost, and therefore the brightest-colored side of an apple, and the damaged specimen either remains on the tree or is broken off. Sometimes, but not often, the fruit is carried off. The softer and brighter-colored apples, like Fameuse, Astrachan, Duchess, Alexander, St. Lawrence, and the like, usually suffer the most. As a rule, however, the crows may be frightened away by some of the well-known devices, and they should be regarded as more useful than injurious. Incidentally it may be stated that squirrels often make holes in apples, and more frequently in pears, but this destruction is apparently done for the seeds rather than from any liking for the fleshy part of the fruit.

Arnold Arboretum.

J. G. Jack.

A Double May-weed.

To the Editor of GARDEN AND FOREST:

Sir,—Last summer a friend found some plants of May-weed, *Anthemis* (Maruta) *Cotula*, which had double flowers. The heads were unusually large, and the flowers were ligulate almost to the centre, only a trace of yellow being visible. This doubling up of flowers is not always a beautifying process, but this imported weed has never been called a beautiful plant, and the flowers of this new development are really handsome. Besides these quite double flowers there were others which had two or three or more rows of ligulate florets. The individual heads of each plant were invariably alike, that is, they were all double, all single, or all semi-double. I am told that these double flowers have been seen hereabout occasionally

for several years, but I have not seen the fact recorded. I sowed some of the seeds taken from the double flowers, and while many of the plants reverted to the type, some of the seedlings showed double heads, and it seems plain that by continued selection a stable variety may be secured.

Harmansburg, Pa.

Bessie L. Putnam.

Recent Publications.

The Tannins, a Monograph on the History, Preparation, Properties, Methods of Estimation and Uses of the Vegetable Astringents. By Henry Trimble, Professor of Analytical Chemistry in the Philadelphia College of Pharmacy. J. B. Lippincott Company. Philadelphia. 1892-94.

This useful book, of which the first volume appeared two years ago, has recently been completed. The first volume, divided into two sections, is devoted to the discovery of the tannins and to an account of gallotannic acid, the second to the results of investigations made by the author on the astringent principles of nine species of Oaks, on the Mangrove, Canaigre and the Chestnut.

It will surprise many of our non-professional readers to learn that it is only within the last hundred years that tannin has been recognized as a distinct substance or class of substances, for previously to that time the histories of leather, galls and Oak-barks are the only sources of information regarding the development which led to its discovery. As early as 1763 Dr. William Lewis, in his *Philosophical Commerce of the Arts*, calls attention to the presence in certain vegetable infusions of a substance which, mixed with green vitriol, produced a "a deep black liquor of most extensive use for dyeing and staining black. The power by which they produce this blackness and their astringency, or that by which they contract an animal fibre, seem to depend upon one and the same principle, and to be proportional to one another."

This apparently is the earliest account of tannin, although the facts he states were well known before his time. But the existence of tannin was really established, and gallic acid became of secondary importance as the constituent of galls and in tanning by the investigations of European chemists in the last years of the last century, the first separation of tannin in a pure condition having been accomplished by Proust in 1798.

The most valuable Oak-galls are those produced on a south European and western Asian species of Oak, *Quercus Lusitanica*, by the puncture of small insects (*Cynips Gallæ tinctoriæ*) on the young buds of the branchlets. In these punctures the eggs of the insect are deposited, and around them a mass is rapidly formed, which, in its mature state, becomes the Oak-gall or nut-gall of commerce. The most valuable galls at the present time are collected in Mesopotamia and shipped from Bombay to London; they are known in commerce as Levant galls. The best-known variety in this country comes here under the name of Aleppo or Turkish galls, being shipped from Smyrna. The best galls, according to Dr. Trimble, are gathered before the insect has matured. Galls of rather inferior quality are produced in Japan on a species of *Rhus*, and in Europe from the two varieties of *Quercus Robur*, and also from *Quercus Ilex* and *Quercus Cerris*. The galls which are produced on nearly all our species of Oaks have little commercial value, and American tannin material is practically obtained from the bark of various trees or from the thick tuberous root of the Canaigre, or *Rumex hymenosepalus*, a species of Dock common in New Mexico and Arizona, where it grows near the beds of streams in exceedingly arid regions, promising to become an important article of commerce.

In the second volume Dr. Trimble describes the properties of various tan barks, especially the American Oaks, his description being accompanied with carefully prepared drawings of the fruit and leaves. A chapter is devoted to the tannin obtained from the Mangrove, *Rhizophora*, a common inhabitant of the shores and islands of southern Florida and all other tropical maritime coasts. Curiously enough, in this exhaustive work no account is

given of the Hemlock-barks, which are used in immense quantities in the eastern states and in Oregon and Washington in tanning, or of that of the Douglas Fir, botanically related to the Hemlock, and now valued in those parts of the country where this tree abounds for the tannin contained in its thick bark.

The value of the work is increased by the very full and complete index to the literature of Tannins, beginning with 1791, when two papers on the subject were published, down to the year 1893.

Notes.

The next meeting of the American Pomological Society will be held in San Francisco on the 16th, 17th and 18th of January, 1895. Members visiting California will be the guests of the State Horticultural Society.

Few flowers of comparatively recent introduction have so quickly attained popularity as those of Cosmos, which are now to be found on almost every sidewalk flower-stand with Chrysanthemums and Carnations. They have a delicate and fugacious look, but there are few cut flowers which last so long when placed in water.

The fact that an English nurseryman sends to this country, and pays \$500 for a small plant of the yellow-flowered variety of *Cypripedium insigne*, shows that the trade still believes that the market for extraordinarily rare and peculiar Orchids is still likely to be maintained, in spite of the generally hard times which are affecting all parts of the world.

The windows of many of the flower-stores in this city have lately been singularly attractive. Of course, some windows are overloaded and show something like barbaric profusion rather than true refinement, but in one or two of them last Saturday afternoon there appeared a blending of colors in soft harmony, an absence of everything incongruous and superfluous, a delicacy and dainty grace which revealed a taste and skill never displayed here in similar places half a dozen years ago.

The season for green fruit from California is about over, although forty car-loads, mostly of grapes, were sold here at auction last week. Taking the year through, the shipments from California have exceeded those of last year by one thousand car-loads of green fruit, one thousand car-loads of canned fruit and vegetables and 450 car-loads of raisins. Notwithstanding this increased product, the depression of trade, the great railroad strike and other influences have kept prices down, so that the actual returns to growers were not as great as they were last year.

Grapes of the best quality from California are still abundant, but they are bringing somewhat higher prices, partly on account of the scarcity of Almeria grapes, importations of which will hardly amount to half as many barrels as were received last year. Florida oranges are beginning to show good color, although they are not yet as sweet as the Jamaica fruit. The best grades of King apples, Northern Spies and Fall Pippins bring good prices, in spite of the continued large shipments to Europe. One hundred thousand barrels were sent to England last week, and an equal amount will probably be shipped the present week. The fruit has been bringing in the English markets as much as it would sell for here. Good Newtown Pippins netted \$4.50 a barrel, and it is interesting to note that some of them came from Oregon.

In places where the garden has a gravelly or other porous, well-drained subsoil, a simple plan to keep a few vegetables over for family use is to take both heads from a few sugar-barrels and sink them in the ground, leaving their tops about six inches above the surface. The practice of Mr. C. L. Allen, who recommends this method, is to fill the barrels about half-full with vegetables, and then to place over them an ordinary barrel cover. The warmth from below keeps out frost from above unless the temperature falls to zero, when some old matting or other material can be thrown over the tops of the barrels, to be removed as the vegetables are needed. He has kept beets, turnips, carrots and parsnips in this way until the middle of April, and the last that were taken out were as fresh as when they were put away in the fall. Cauliflower and cabbage can also be kept perfectly in the same manner.

It has been stated that the admirable *Narcissus* known as *Bicolor Horsfieldii* was a chance seedling, but a correspondent of the *Gardeners' Chronicle* writes that the flower was obtained

by crossing *Narcissus bicolor* with pollen from a fine flower of *Narcissus Pseudo-narcissus*, and that from the same batch of seedlings two or three other good varieties came, which are still in existence. Horsfield himself, although a weaver, was an excellent botanist and a skillful cultivator, and he is known to have obtained other plants by cross-fertilization, so that it is altogether probable that the famous flower which bears his name, and which has been called "King of Daffodils," is a genuine memorial of his skill, and not a lucky accident. When he died in 1854 he had a stock of twenty-eight blooming or full-sized bulbs, and nine smaller ones, which were sold for the benefit of his widow.

Farmers who hold their crops for higher prices do not always consider the shrinkage which many products undergo, so that the advance in prices, if it comes, is often counterbalanced by loss in quantity from various causes. A correspondent of the *American Agriculturist* states that a farmer last autumn on Long Island, as an experiment, put in a storage warehouse one hundred bushels of potatoes which weighed sixty pounds to the bushel. In April he weighed the same potatoes before sorting out those which had become unsalable, and found that he had eighty-three bushels. Examination showed that many of the tubers which had been large enough to sell in the autumn, were now too small to sell, and, besides this, some were rotting, so that when these were taken out he had seventy-eight bushels to sell instead of one hundred. This was a loss of twenty-two per cent. in quantity, besides the cartage he could have saved if he had sold the potatoes from the field, not to speak of the interest of his money for six months.

Last year we spoke of the fact that a Siberian Knotweed, *Polygonum Sachalinense*, had been recommended by well-known authorities, like Monsieur Charles Baltet, for example, as a forage-plant for dry climates. In speaking of this matter we noted the fact that in Europe some experimenters had also recommended *Polygonum cuspidatum* as a forage-plant for similar situations; but inasmuch as this plant is a rampant weed in Central Park, which flourishes particularly in moist deep soils, and is altogether too tough for succulent forage, we suggested that while *P. Sachalinense* might prove valuable for ensilage, it would hardly supersede Indian Corn for green fodder in the Corn belt of this country. Nevertheless, some nurserymen at once began to propagate and advertise the new forage-plant, and have been selling *P. cuspidatum* for *P. Sachalinense*. Many buyers of this stock will be disappointed, but we should be glad to publish the experience of some one who has tested the genuine article. We observe that the Bureau of Agriculture of South Australia doubts whether the plant is suitable for any but rich soils and moist localities, and adds that in such places Lucerne, Clover and the usual cultivated fodder-plants would give better returns. Some of our western correspondents, who had been growing this *P. Sachalinense* as an ornamental plant, reported that it seemed to withstand fairly well the droughts of August and September, when pasturage is nearly always short. Do the trials on a larger scale made this year confirm this impression?

The distortion of the leaves of Peach-trees, which is known as leaf-curl, and the abnormally inflated fruits, popularly called plum-pockets or plum-bladders, on some other species of *Prunus*, are both caused by parasitic fungi belonging to the family of *Exoascæ*. Professor Atkinson, of Cornell University, has been making a study of these fungi, and he has published the results of his investigation in a bulletin illustrated with twenty plates containing eighty figures. Fifteen species of *Exoascus* are described here as growing on various species of *Prunus*, with illustrations of the method in which they curl the leaves, enlarge the fruits, cause "witch's-broom," and do other damage. Professor Atkinson does not give information which will enable fruit-growers to control these diseases because the experiments yet tried are not so definite and conclusive that remedies can be given with confidence. He hopes, however, that this contribution to the knowledge of these fungi, with the characteristics of their work, will lead to a more intelligent line of experimentation. It should be borne in mind that these fungi possess a mycelium which lives in buds or branches of the trees during the winter when they have once become affected, so that it is likely to show the disease more or less every year. Of course, since the mycelium is perennial in the young branches, no buds should be taken from infected trees for budding nursery-stock or orchard-trees. When only a few branches of trees are affected, pruning some distance below the diseased portion might be tried, especially in the case of those trees where the leaf-buds and twigs are deformed.

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Quarantine against Plant Pests.

SOME time ago we published a cut illustrating the damage which was being inflicted on Pear-trees in a portion of New Jersey by a borer which had been detected for the first time in that state by Professor Smith. Individuals of one sex had only been obtained, and there was, therefore, some doubt as to what particular species was preying upon the trees, but an interesting letter from Professor Smith in the present issue identifies it as another European insect which has probably been introduced in Pear-stocks imported from Germany, and which, as we now learn, is already established over a considerable area. This is only one of many instances where our orchards and vineyards and farms and gardens have been subjected to serious loss by the introduction of foreign insects. Of course, these enemies do not move across the ocean in one direction only. The Phylloxera, for example, which has ravaged the vineyards of Europe, and is now probably found all over the globe wherever the Vine is cultivated, had its original home in America. It is well known that for several reasons insects which emigrate to different parts of the world may find such favoring conditions for their development in their new homes that they will multiply more rapidly and become much more dangerous than they ever were in the place of their origin, and there is, therefore, a special cause for caution in admitting these strangers. For these reasons laws were passed in California several years ago imposing a quarantine upon all plants likely to harbor any insects which may become dangerous to the fruit interests of that state, and it is said that Oregon, Washington and British Columbia are proposing to enact laws of the same character.

The report of Mr. Craw, the California State Quarantine Officer, we have not seen, but, to judge from an article in *The Independent*, his work has been of genuine value to the state. Of the four hundred vessels which he inspected last year he found plants and trees on one hundred and fifty-six. The greater portion of these came from Japan, but vessels came also from Honolulu, China, New Zealand, Australia and Mexico. Cinnamon-trees from Singapore were found infested with a dark gray wax scale insect unknown on our coasts. The young wood of some

pot-grown Cherry-trees from Japan was found entirely covered with a new aphid which might have proved a serious injury to the Cherry-groves in California, and therefore they were dropped overboard. Different scale insects were found on Magnolias, Oleanders and Camellias. Oranges from Mexico were infested with the deadly "long scale," and guavas from Central America with other insects which might soon make themselves at home in southern California, where this fruit is now extensively cultivated. Perhaps in some cases the danger was imaginary, since the insects were bred in such warm latitudes that they could hardly survive the climate of California. Nevertheless, it is undoubtedly the duty of the officer under the law to destroy the infested fruit and plants. Two or three months ago a regulation was passed by the State Board of Horticulture in California prohibiting the importation of rabbits or other animals or birds which are known to be detrimental to fruit or fruit-trees, and ordering the destruction of such animals if they had been landed. This ordinance was probably inspired by the fact that a passenger on a steamship from Australia had brought with him one of the "flying foxes," or fruit-eating bats, which are so destructive in many tropical or subtropical countries, where, under cover of the night and in countless numbers, they invade and lay waste orchards and gardens in spite of every effort to repel them.

Of course, there are many difficulties in the way of framing satisfactory quarantine laws, and still more difficulty in enforcing them. The courts of California have been appealed to in several cases, and the work has been obstructed in other ways, but it is stated that only one new pest has been introduced into California since any attempt was made to enforce the laws. Some of the California papers are criticising eastern nurserymen who complain against these restrictions upon trade, and some eastern nurserymen, on the other hand, hold that the laws operate not so much to exclude the enemies of plants as to give a monopoly of business to local nurserymen. It is well for the fruit-growers to be vigilant if by this they can keep away from their state the Peach-yellows and the Plum-curculio, but when they criticise eastern nurserymen as unscrupulous and selfish they ought to remember that the pernicious or San José scale has been sent from California into the orchards of the eastern United States. Our issue for the 29th of August contains the picture of a pear infested with these insects, and at the meeting of the Association of Economic Entomologists in Brooklyn last August, Professor Smith bought half a dozen California pears at random from the nearest fruit-stand, and every one of them was infested. On some of them both male and female scales occurred, and they were in exactly the condition to favor the introduction of this much-dreaded pest. The skin of one of these pears dropped near a fruit-tree would furnish a perfect condition for the establishment of a colony. The protection of the fruit interests of the whole country may, therefore, demand an inspection of the thousands of car-loads of fruit going out of California, as well as of the few plants and fruits carried into that state.

The fact is that the establishment of an efficient quarantine on the borders of every state in the Union would be a task beset with endless embarrassment. A year ago (see vol. vi., page 401) we explained some of the difficulties which the Federal Government would encounter if, under its authority to regulate commerce among the several states, any attempt should be made to prevent the transportation of pestiferous insects and contagious plant diseases from one part of the country to another. We pointed out, too, some of the difficulties which a state government must face in its efforts to suppress destructive insects, plant diseases and noxious weeds within its borders. It would not be an easy matter to exclude these pests from foreign countries since the germs of disease, the seeds of evil weeds, the eggs of insects and insects themselves can be imported in a hundred ways, even if all the fruit and seeds and bulbs and living plants brought into the country

were rigidly inspected. These difficulties would be multiplied many fold if the supervision of all the commerce between the various states is undertaken. A single state may prohibit the importation of fruit or nursery-stock, for example, if it comes from a disease-infected district, just as it has the power to exclude cattle sent from a place where the Texas fever or pleuro-pneumonia prevails. In every case where such transportation is arrested, decision must be made as to whether the material is justly held or not, and what tribunal is to decide all these cases? If all the states set up a quarantine, such action might compel an examination not only of all the nursery-stock and fruits which cross state lines, but of every article which is liable to harbor a dangerous insect or a fungus spore, so that the cost of all this examination would ultimately be more serious than the ravages of the pests themselves. Legislation in individual states for the suppression of some of these enemies may be locally beneficial, but even then such laws will only have value when there is a strong public sentiment behind them, not to speak of such a public spirit in individuals as would enable them to take broad and patriotic views of the destruction of their own property when it threatens that of others. We by no means assert that quarantine laws which have been so far enacted are to be condemned, but it is pretty plain that not only the spirit of individual independence, but the sentiment of retaliation of one community against another could be easily aroused if it should appear that the rights of one section were infringed by the restrictions on commerce made by another. Altogether, the subject is one worthy of careful study by every thoughtful citizen.

In conclusion, it is worth while to repeat here what we have said before on more than one occasion: What the General Government can do, and what the state governments can do, in the same direction, is to give liberal support to the scientific study of contagious diseases of plants and of pestiferous insects, and to experimentation for insuring the most effective methods of eradicating them.

California Experiment Centres.—I.

THE experiment station system in California is interesting because it covers so much territory, and extends over such a range of soils and climates. It will, necessarily, be incomplete for many years to come, but care has been taken to occupy the most important outposts, and future development will be along lines already laid down. The work is controlled by the University of California, from its central station at Berkeley, on the east shore of San Francisco Bay, opposite the Golden Gate. The funds which maintain the regular outlying stations, six in number, are chiefly from the General Government, partly from the state. Several lesser viticultural and horticultural stations, supported by private individuals, and more or less closely connected with the university, are subject to some supervision. The points at present covered by the main system are: the Sacramento Valley, the San Joaquin Valley, the central portion of the Sierra foot-hills, the south-central part of the Coast range, the southern California coast, and the southern California interior valleys, besides several important districts around San Francisco Bay. The inspector, in visiting the six outlying stations of the first rank, travels about fifteen hundred miles to make a complete circuit. When the extreme north-west and north-east corners of the state have the stations which are greatly needed there, and when one or two more are established in the extreme south among the mountains and on the desert, a round of visits will necessitate a journey of three thousand miles.

The elevations of the stations vary from a few feet above the ocean to about twenty-five hundred feet above it. When a forestry station is established on Mount Hamilton its work will extend to four thousand feet above the sea; when the time comes for alpine stations one can be put in some Sierra valley seven thousand or eight thousand feet high.

The climates vary as greatly as the altitudes and geographical locations, and the soil of each station covers as wide a range of representative soils as it has been possible to obtain. Differing in almost every particular from each other, the stations are developing marked individualities, and form a most attractive group of pioneer experiment-centres in forestry, horticulture and general agriculture.

THE CHICO FORESTRY STATION.

On the first of July, 1893, the University of California took possession of the Chico Forestry Station, which had been established half a dozen years before and had become run down and neglected. The sum of \$2,000 per annum appropriated to keep up two stations was evidently insufficient, and it was plain the university would have to advance more funds to carry on the work until the next session of the Legislature, but the duty of the Agricultural Department of the University seemed plain, that is, to endeavor to preserve and develop a piece of state property potentially very valuable for experimental forestry purposes.

The twenty-nine acres of land which constitute the station are beautifully situated a mile east of the town, toward the foot-hills, on rising ground, south of Chico Creek, and comprise both red and alluvial soils. The shape of the tract is nearly that of a blunted triangle, with the base toward the town. Large Oaks and Sycamores are massed north, along the creek, and about a dozen large Oaks are on the station land. A lumber company's water-flume, extending back into the Sierras, passes along the western edge of the tract; the soil under it is continually wet, and offers a good place for Willows and water-loving shrubs. The station also controls, for planting purposes, a superb avenue extending from the south-west corner of the tract to the town. Large Locusts, and some very large White Oaks (*Q. lobata*) already line portions of this avenue, and it is being planted with other Oaks. Professor Sargent sent out a collection of Japanese Oaks, and many of the American species have been obtained elsewhere.

A second approach to the station is by a winding road along Chico Creek, a very charming drive or walk at every season of the year, through one of the finest young Oak groves in California. The vines of *Vitis Californica* here often climb to the tops of the Sycamores. Perhaps a thousand acres of woodland extend north from near the Forestry Station, and form one of the most attractive portions of Rancho Chico. In the centre of a large open glade, about a mile from the station, is the famous Hooker Oak, illustrated and described in *GARDEN AND FOREST*, vol. iii., p. 606.

On so small a tract as twenty-nine acres there cannot be any extensive forestry work. It is necessary to do much testing of species, a few trees of each, and this arboretum work is also desired by the community for the Chico Normal School classes. The demand for something of an arboretum is therefore strong, and, if kept within limits, entirely reasonable. But, as soon as the land is cleared of the *Sorghum Halapense*, which has been allowed to take possession of a considerable part of it, it will be practicable to lay out ten or twelve acres in mixed high forest, using California species for the Conifers, and for the hard woods probably *Quercus robur*, *Q. Cerris*, which grows very fast and tall here, *Eucalyptus rostrata*, *Zelkova Keaki* and a few others. Such a forest would blend finely with the natural groves of Oaks near it, and would form a background for a more formal arboretum toward the western entrances. A little coppice-work may prove desirable, because a great many farmers on the treeless portions of California wish to have fast-growing wind-breaks and fuel-producing woodland, but know little or nothing about this department of forestry.

A very interesting lot of trees is now growing on the station, and some are quite large, as they must have been six or seven years planted, although no register of the place seems to have been kept. The Pines are chiefly *Pinus Austriaca*, *P. Canariensis*, *P. insignis*, *P. ponderosa*, *P. resinosa*, *P. Strobus* and *P. sylvestris*—in some

cases several hundreds of each species. There are 112 very fine plants of *Sequoia gigantea*, which average ten feet high, a beautiful group, which, when thinned, will possibly leave twenty-five or thirty to stand for many years to come. The Redwood does not do so well, but a group of twenty-four are in fair condition. The other leading Conifers are *Abies balsamea*, *Chamaecyparis Lawsoniana*, *Cedrus Deodara* and *C. Libani*, *Picea pungens*, *Pseudotsuga taxifolia*, some *Retinisporas*, *Thuja occidentalis*, and a block of 117 Italian Cypresses, most of them fifteen feet high. In the present nursery are *Abies Cephalonica*, *A. Pinsapo*, *A. Menziesii* and *A. concolor*, besides a number of other Conifers, chiefly Californian, not yet represented in the grounds.

Some thirty species of deciduous-leaved trees are on the ground, mostly in groups, but a few as single specimens, and the nursery-stock covers quite an extensive range of species. The seed-beds, having been started on a small scale only last spring, do not yet make much showing. Glass sashes and lath screens for shelter have been provided, and a good deal of seed-sowing will be done this coming winter and spring.

As for the mixed high forest to be established on ten or twelve acres, the first experimenting necessary is with fast-growing native shelter-trees. It is quite likely that more land can be obtained by the state whenever it is really needed, but there is a good deal to be done before the present twenty-nine acres are fully utilized.

The foreman of the station is Mr. A. B. Boland, a nurseryman of experience, and the local patron or trustee is Robert Pennell, the Principal of the Chico Normal School, a Yale graduate, and a gentleman of high standing in educational work. According to the California system, each station has one patron, to serve as the local bond of union with the community; the inspector forms the chief bond of union with the central station, and, with the Director and his staff of workers, all of whom visit the outlying stations more or less, but none as often as the inspector does. The system is one that admits of much extension at small increased expense. It is avowedly planned with a view to the future needs of California.

Niles, Calif.

Charles Howard Shinn.

Foreign Correspondence.

London Letter.

A NOTABLE SALE OF ORCHIDS.—Record prices for Orchids continue to be made. The collection formed by the late Mr. Hardy, at Pickering Lodge, Manchester, has been disposed of by auction, part of it having been sold about three months ago and the remainder this week. Mr. Hardy had a keen eye for a good variety, was a genuine lover of Orchids, and, most important of all, was wealthy enough to buy over the heads of most collectors. Thus it came about that when his plants came to be sold, the competition for them was keen. The sale this week lasted two days, and the prices of the lots, mostly single plants, averaged nearly £4. Some of the highest prices were: *Cattleya Massaiana*—a form of *C. gigas*—100 guineas; *C. Hardyana*, 70 guineas; *Lælio-Cattleya calistoglossa*, 50 guineas; *L.-C. bella*, 75 guineas; a larger plant of same, 150 guineas; *C. Reineckiana*, 75 guineas; *C. Schroederi alba*, 170 guineas; *Lælia Tresederiana*, 22 guineas; a small plant of a white-flowered *Sobralia*, 50 guineas. These are all fancy prices, but a still more extravagant price was paid for a small plant, in a four-inch pot, of *Cypripedium insigne Sanderæ*, which was knocked down at 260 guineas. Mr. Hardy purchased this plant only a few months ago from the Messrs. Sander for 100 guineas. These prices equal those realized by thoroughbred yearling race-horses at the best of Messrs. Tattersall's sales! Clearly, the high position held in English horticulture by Orchids for the last twenty years is not likely to be lowered for some time at this rate.

SOPHRO-CATTELEYA LETA is a new hybrid raised by Messrs. Veitch from *Sophranitis grandiflora* and *Lælia pumila Dayana*, the latter being the seed-bearer. The flowers are about the same size as those of a good variety of the *Sophranitis*, the form of the lip being intermediate between the two parents; the color of the whole flower is a pale reddish pink, the front part of the lip being of a darker shade and the base white. It is not nearly as good in form or color as the hybrid *Batemaniana*, raised by Messrs. Veitch from the *Sophranitis* crossed with *Cattleya intermedia*, and flowered by them in 1886.

ZYGOPETALUM CERINUM, generally known under its Reichenbachian name of *Pescatorea cerina*, is one of the best, as it is now the most popular with cultivators of the section to which it belongs. It is in flower now in a shady moist position in the stove, its large cream-colored fleshy flowers leaning forward singly on stalks four inches long, the segments like a half-opened hand and the fleshy yellow lip with its raised ring looking like a tempting bait set in the middle of a five-fingered trap. This is the kind of Orchid flower that the uninitiated stand in front of and wonder why such a flower was made. A lady said it appeared to be laughing heartily, while a boy with her said he thought it was putting its tongue out at her. The species has been in cultivation since 1863. All the plants of this section, that is, the *Pescatoreas*, *Bolleas* and *Warsecwiczellas*, like shade and moisture.

STAUROPSIS PHILIPPINENSIS.—A plant of this interesting Orchid was awarded a botanical certificate last week by the Royal Horticultural Society. It is the type of the genus which was created by Reichenbach in 1860, Lindley having described it fifteen years before as a *Trichoglottis*. There are some eight species known, all of them Malayan, the best known in gardens being *S. gigantea* (Vanda) and *S. lissochiloides* (Vanda Batemani). Compared with these two, *S. Philippinensis* has small flowers; they are a little over an inch in diameter, brown-purple in color, with pale margins, and they are borne singly in the axils of the leaves. The habit of the plant is that of *Vanda coerulea*. It is purely of botanical interest.

STENOGLOTTIS LONGIFOLIA.—With the exception of *Masdevallia pulvinaris*, a spike of which lasted in flower eighteen months at Kew, I know no Orchid that continues in flower so long as this *Stenoglottis*, which pushed up its spikes in the spring of this year, developed its first flowers at the end of July, and is still developing them. It is one of the most useful of the terrestrial Orchids introduced from south Africa, as it is easily kept in health under the same treatment as suits *Odontoglossums*, and it never fails to flower. The Kew specimen has five spikes, each now nearly two feet high, and the flowers are bright blue-purple, with reddish spots. It continued in flower over three months last year.

ANGRÆCUM KOTSCHYI.—Plants of this rare species were sent to Kew from the Kilimanjaro district, in eastern tropical Africa, two years ago, and one of them is now in flower. It has scarcely any stem, obovate-oblong, bilobed leaves four to seven inches long, and a horizontal raceme a foot long bearing seven pure white flowers, which are nearly two inches across, the two lateral petals set back like a pair of wings; the hanging spur, which is eight inches long, is spirally twisted, like a tendril, the apex being flattened out as if hammered. What can be the meaning of this twist in an appendage the use of which is supposed to be to hold nectar for the insects whose visits are essential to fertilization? There is nectar enough secreted in the spur, and delicious to the taste it is, but no insect could possibly get to it from above, however long and flexible his proboscis might be. The species is rare in cultivation, but it probably could be obtained in quantity from the region of the African Lakes Settlements.

MEGACLINIUM TRISTE.—All the species of this African genus are peculiar in the form of their inflorescence, and *M. triste* is especially so. It is now flowering for the first time in the Kew collection, and a botanical description by

Mr. Rolfe has been prepared for publication in the *Kew Bulletin*. It has a creeping rhizome, oblong, three-angled pseudo-bulbs two inches long, each bearing a pair of leathery leaves five inches long and one inch wide. The scape is eighteen inches long, bent at right angles two-thirds of the way up, the upper third being clothed with closely set imbricating chaff-like scales, from among which the purple-black flowers are developed in slow succession. The segments are half an inch long. The scape without the flowers is not unlike an ear of corn.

BULBOPHYLLUM SAUROCEPHALUM is another strange-looking Orchid. It has a purple club-shaped inflorescence four inches long with small purplish striped flowers scattered over the thickened portion, suggesting a crowd of small flies at rest or at "feed."

MILTONIA BLUNTII, var. *LUBBERSII*, is one of the best of the *Miltonias*. The type is said to be a natural hybrid between *M. spectabilis* and *M. Clowesii*, and it was introduced in 1879. The variety was first flowered in the Botanic Garden at Brussels in 1887, when it was named in compliment to the curator. It has flowers nearly four inches across, the sepals and petals colored cream-yellow, heavily blotched with purplish brown, and the large patent lip purple at the base, the front part nearly white.

MAXILLARIA MIRABILIS is a new introduction of which a figure and description are published in the last number of *Lindenia*. It looks very near *M. fucata*, which was described by Reichenbach in 1886, and supposed to be from Ecuador. Monsieur Cogniaux, however, recognizes this similarity, but says *M. mirabilis* is richer and deeper in color, and has smaller pseudo-bulbs. The flowers are two inches across, and colored bright orange-yellow and crimson, with brown spots. It is a most attractive Orchid.

ONCIDIUM INCURVUM is one of the best garden Orchids in the genus, as, unlike many *Oncidiums*, it keeps in health from year to year in an ordinary greenhouse, and every autumn it sends up long elegant racemes of pretty flowers. At Kew a plant now in flower has racemes six feet long, with numerous branches, usually in pairs and five inches long, each branch bearing from six to nine flowers, which are an inch across, the segments reflexed and the color white and bright purple. The flowers last several weeks.

ERIA STELLATA is an old garden Orchid, supposed to have been introduced from Java, and described and figured by Dr. Lindley. It is one of the best of the genus, growing well and flowering freely in a stove, the racemes erect, of about the same floral effect as a Roman Hyacinth, the flower-segments being nearly an inch long, pure white and fragrant. It flowers every autumn. There is a figure of it in the *Botanical Magazine*, t. 3605.

London.

W. Watson.

Plant Notes.

Æsculus parviflora.

THE Dwarf Buckeye, properly called *Æsculus parviflora*, is probably best known to horticulturists by the name of *Æ. macrostachya* or *Pavia macrostachya*. This Buckeye is, in its season of bloom, one of the most effective shrubs on a lawn, and it is still too rarely seen in our gardens. There is a generally prevalent idea that the plant is an exotic, a native of China or Japan, whereas it is indigenous and peculiar to certain parts of our southern states, although quite hardy when transplanted into most of our northern states, and in central Europe.

It is never a tree, but is sometimes quite a large shrub. In its native habitat, in the higher districts of Georgia and South Carolina, it may vary from three or four to nine or ten feet high, according to situation and environment. It may be trained to grow taller, but under ordinary circumstances in cultivation it is usually a broadly spreading shrub from six to eight or ten feet high. The stems are usually numerous, the outermost and lowest often becoming horizontal and resting on the ground, the central stems being erect, so that a well-grown plant assumes a broad

dome-shaped form. The branches which rest on the ground form roots very readily, and thus new plants are established, so that a single individual may in time spread itself over a wide area and appear very much broader in the diameter than in the height of its branching. The illustration on page 445 of a plant in a Massachusetts garden fairly represents the appearance of a plant under ordinary conditions, when it has reached an age of twelve or fifteen years.

The leaves of *Æsculus parviflora* are usually composed of five obovate, finely, but bluntly, serrated leaflets, smooth above and densely pale tomentose beneath. They are thin, and borne on long, rather slender, petioles. They are abundant enough to give a good covering to the stems, and they appear to be comparatively free from blemish by attacks of insects or fungi.

On the ends of the stems, above the dome of foliage, are produced the slender cylindrical, erect, raceme-like panicles or spikes of flowers. The spikes are often much more than a foot in length, but the length may vary on different individuals, and according to the conditions under which they are grown. In full bloom the plant is a most interesting and handsome object. The single blossom is small, the conspicuous portion being composed of four slender white petals, with about seven thread-like stamens, which sometimes protrude more than an inch beyond the tips of these petals. The lowest flowers on the cluster are the first to open, and they gradually expand during several weeks, exhaling a slight sweet fragrance, and proving very attractive to many kinds of insects. A great merit of this shrub is its habit of blossoming after the majority of woody plants have passed their flowering stage. In this latitude blooming may begin in early July and be continued well into August, according to the situations in which the plants are placed.

In northern gardens it is usual to find comparatively few fruits produced as a result of the innumerable blossoms. These fruits are smooth on the outside, and not prickly like those of the Horse-chestnut, and each generally contains a single seed. Very often the seeds do not ripen, being checked by frost.

This Dwarf Buckeye may be propagated by its ripe seeds, which should either be planted at once in the open ground or kept in moist earth through the winter. They should never be allowed to become really dry. The habit of the plant naturally suggests the facility of propagation by layering, and new stock may be obtained from cuttings.

Æsculus parviflora is the only white-flowered shrubby species in cultivation, but *Æsculus Pavia*, of the southern states, is another shrubby Buckeye. Its flowers, however, are bright red, and more like those of our ordinary red-flowering Buckeyes, with stamens but slightly showing outside of the petals. This plant is rarely tried in northern gardens, although when procured from the higher altitudes of its native habitat, it might prove hardy in many of the northern states.

Arnold Arboretum.

J. G. Jack.

VACCINIUM CORYMBOSUM.—Our woods would lose much of their beauty in autumn if they were deprived of the undergrowth of various Ericaceous plants, and none of these are more brilliant at this season than the High Bush Blueberry, often seen in great masses in deep swamps and moist woods. It flourishes also in open pastures and along roadsides, but rarely attains in such positions a height of more than three or four feet. At its best it is a stout, wide-spreading bush, eight or ten feet high, or even more, and in the last part of October its scarlet leaves are fairly dazzling, and these glowing colors are retained for a month. In fact, it is a beautiful shrub at any season; in this latitude in late May and early June it is decorated with large white bell-shaped flowers, borne on the extremities of the branches of last year's growth; later on its abundant fruit is beautiful, grateful to the taste and wholesome, and it is unsurpassed in the splendors of its autumn colors. It is

grown as a garden-plant to some extent in England, where it is said to be very ornamental in November, but it is rarely seen here in cultivation, although it can be transplanted from its native swamps and hillsides with perfect safety, and it will thrive in good garden-soil and grow more rapidly than most plants of its class. It is strange that it has been so long neglected as an ornamental plant, especially since it has the additional value of bearing an excellent fruit—a fruit, too, which might, perhaps, be much improved if care was exercised in selecting individual plants.

A NEW YELLOW-FLOWERED DATURA.—A plant which was distributed last year by Messrs. Pitcher & Manda under the name of *Datura cornucopia*, and which received the honor of a first-class certificate from the Royal Horticultural Society at London, has become tolerably well known, largely through the generous display of it at the Columbian

and potted in September for the decoration of the greenhouse. In England it will bloom out-of-doors until December, and a good way to treat it here is to plant it in a frame into which frost can never enter. If placed in the conservatory or greenhouse it needs abundant moisture and an occasional stimulant. When the flowers are allowed to remain on the plant the seeds will often ripen here, and if sown under glass and transplanted in the open garden when about six inches high good-sized plants can be obtained in a year. It is also propagated by dividing the roots, which are not bulbous, in the spring. Most assuredly it is a plant which ought to be more frequently seen in American gardens, to the great majority of which it is a total stranger.

STERNBERGIA COLCHICIFLORA.—Among some collected bulbs of *Sternbergias*, now flowering in Mr. Gerard's garden, are a few plants of this species. The flowers appear before the



Fig. 70.—A Dwarf Horse-chestnut, *Æsculus parviflora*, in a Massachusetts garden.—See page 444.

Exposition. Mr. W. A. Manda now has some plants from seed received from South America of what seems to be the same species, only the flowers, instead of being purple and white, are a uniform creamy yellow. The new plant seems to have the same stout habit, dark purple shining branches and large clear green leaves, which characterize the type, and it promises to be quite as floriferous. It flowers from seed the first year.

SCHIZOSTYLIS COCCINEA.—This Kaffir Lily, or Scarlet Flag, by both of which popular names it is known, is now in flower, and the ease with which it is grown and the striking effect of its bright red salver-shaped flowers, arranged in two ranks on long slender stems, makes one wonder why it is not grown more largely by florists, especially as it lasts remarkably well when cut. It belongs to the Iris family, and was introduced from south Africa thirty years ago. It can be grown in the open ground during summer

leaves, and are about the size of those of *S. lutea*, though, perhaps, lighter in color. They are *Colchicum*-like in form, the inner segments being narrower than the others. The leaves may be expected in the spring.

Cultural Department.

Carnations, New and Old.

DURING the past summer two Carnation growers of my acquaintance made a tour of England and Scotland, visiting the principal horticultural establishments, and particularly those where Carnations were made a specialty. They went separately, and so their views were formed independently, but both expressed astonishment at the great variety of types: Bizarres, Flakes, on white and yellow grounds; Cloves and Selfs, not to mention the beautifully edged Picotee forms. Again, they noted the clear division between hardy or border

varieties and the tree or perpetual-flowering varieties. Since hardy Carnations have not been satisfactorily grown in this country, these are seldom, if ever, seen. The Carnation, as the majority of us know it, is an offshoot from the tree or perpetual. But what most struck my American friends was the marked difference between the English and American types of the perpetual class. Both are the result of very careful selection and adaptation to the conditions under which they are grown. These are wider in matters relating to culture than to climate. I do not know of a single old or new English variety now grown here, at least for profit, the simple reason being that they cannot be flowered to any extent during the winter months. On the other hand, our varieties, grown on the other side, under ordinary pot culture, are regarded as flimsy. No wonder they should be soft under a sunless English winter.

Carnation growers across the water say that marked advance has been made, and that the plants and flowers there are better than they ever were before. So here, the improvement during the last ten years has been wonderful, and yet the best American and the best English Carnations are farther apart than they ever were. One of my acquaintances admired and brought home a few plants of the new crimson Uriah Pike, of which we have heard so much, and a comparison between this and the best of our American crimsons, Ferdinand Mangold, shows surprising differences. The former, with its broad, dense foliage of strong growth, shows unmistakable traces of the old Clove breeding. The latter, tough, blue, with abundance of narrow, erect, rounded leaves, of hard texture, admitting freely the light and air, so that the soil may be kept sweet, is just the type of plant needed for best results under glass in winter. The best that can be hoped for from Uriah Pike is that as a pollen parent it may infuse new life into varieties which have lost constitution through constant cultivation indoors. We can hardly expect much improvement, however, on Ferdinand Mangold, as a perfect crimson, for some time. Tailby, Fisher and Fewkes have been raising and testing crimsons every year, but so far nothing has approached the one now generally grown.

I lately spent an afternoon with each of the veteran growers and raisers of Carnations, Fisher, of Framingham, and Tailby, of Wellesley. Their reminiscences were most interesting. Mr. Fisher is of opinion that while the varieties of to-day have certain good qualities required in the retail florists' business—that is, they hold their color, they do not fold, they have long stems, stronger calyces, greater variety, and a range of colors not generally found in the older sorts—nevertheless, no substantial gain in size has been reached. Few flowers grown in the ordinary way, and for market, average more than two inches across. It is only by disbudbing and special culture, which does not often pay, that three inches, and sometimes more—as in the case of William Nicholson—is attained. But old varieties wear out, and if any real advance is made, or if we wish even to hold our own, new varieties must constantly be raised. It may be here noted, that this is not the case with Chrysanthemums; old varieties can be grown as well, or better, than they could be fifty years ago. Mr. Fisher has raised over eight hundred seedling Carnations this year, and of these about a dozen are taken in for trial.

The method of raising and flowering seedlings gives a clue to the origin of the American type. Seedlings are planted out as early in the spring as possible, having been fertilized, ripened, sown and raised to the planting-stage indoors during the winter. This rearing of the plants under artificial conditions must have a definite influence on their constitution and habit. Those which bloom first generally show more of the perpetual character, and if the habit, color and other requisites are good these early-flowering plants may be marked and retained for trial. It is seldom, however, that the earliest bloomers have constitution enough. The mid-season ones are the best. Those blooming toward the end of the season often give the finest flowers, and are of excellent constitution; but their lateness, indicating an affinity to the border type, is against them, and they are often found to be late under glass, and croppers at best. Those which do not bloom at all are of no use to the American florist, the majority being of the true border type, and to this type about ten per cent. of the entire lot of seedlings invariably revert, no matter how carefully the seed-flowers are selected. One of Mr. Fisher's new seedlings attracted attention as a particularly bright scarlet. It is notable that up to date the most profitable scarlet varieties are Portia and Florence, and of the two Portia is generally conceded the brighter, and, although not so large as Florence, it has a better stem. Florence is a heavy cropper, and fine when freshly picked, but its color does not hold well. This new

variety is a third cross of a scarlet Marguerite on Florence. It is both early and prolific, and has a good stem and calyx.

As far back as 1877, about the only varieties grown by florists were Boule de Neige or La Purite, for white, and De Graw, cherry-red. From these several were raised—very good in their day, but now out of date. Anna Webb was raised in 1882, which, until a year or two ago, was the best crimson grown. It is now superseded by Ferdinand Mangold, raised by W. W. Simmonds, of Geneva, Ohio, as a seedling from Anna Webb. This is said to be of better constitution, but, for my own part, I see very little difference, and many growers still prefer the original.

Florence came in 1884, and is one of the healthiest growers and most prolific of its color to-day. Ada Byron and William Nicholson, the two new pink varieties sent out this spring, are also of Mr. Fisher's raising. He also has some fine new whites, it being the raiser's object for some years past to get a white flower equal to Mrs. Fisher, with a better stem. Some advance has been made, but he finds some objection to all of them.

Joseph Tailby is known among Carnation growers as the originator of Grace Wilder, which, until a year or two ago, was the best commercial pink variety. After nearly twenty years of service, its constitution is gone, and the raiser himself finds he cannot grow it with profit any longer. William Scott is its best substitute, and is really a very fine variety, but its color does not hold so well, showing traces of purple when a day or two old. Mr. Tailby has been working for a number of years to get a pure yellow prolific enough for commercial purposes. That he has a perfect flower of this shade in Henrietta Sargent is true, but, although several crosses removed from the border type, it is still late, and does not flower profitably until February. Orders are booked ahead for the crop, and, with higher prices, it pays as well as the more prolific varieties.

From Boule de Neige and De Graw came some of the best varieties ever raised, and Mr. Tailby says if he now had some of these plants which originated eighteen years ago they would be profitable, but at that time striped and other fancy varieties had no sale. To my suggestion that Grace Wilder be taken as a seed parent, the reply was made that it had never been done, and never ought to be. A very prolific kind should not be used for seeding; such plants nearly always lack constitution. The rule is to take a stronger variety for seeding, and to this end there were planted here a number of single and semi-double sorts of the proper sturdiness for this special purpose. It is seldom that the pollen variety does not transmit its color and general character to the seedlings. To illustrate this an instance was shown where a variety with a striped flower whose size and color were all that could be wished, but with a bushy and straggly habit, was used as the male parent. It so happened that one flower of this variety had sported a Malmaison pink. Pollen was taken from a normal flower and applied to a flower of another variety which had the qualities required for a seed parent; and then pollen from one of the sport-flowers was applied to a second flower of the seed parent. Each flower produced seed, and the two groups of seedlings plainly show the influence of the pollen parents, one group showing kinship to the normal flower, and the second group showing as clearly the Malmaison blood of the sport. A promising new white, Helen Schafer, a cross between Mrs. Fisher and Lizzie McGowan, seems, by its intermediate form, to inherit the qualities of both parents. It was named in honor of Miss Schafer, the lamented President of Wellesley College.

Wellesley, Mass.

T. D. Hatfield.

Carnation Notes.

OWING to the exceptionally mild weather which we have had during October, Carnations grown in the open ground are still blooming profusely, and the flowers of Mrs. Fisher and Nobscot (scarlet) are quite equal to those produced in August. It is quite unusual to gather presentable Carnation-flowers in November outdoors; as a general thing our plants are killed by the middle of October.

Plants in the benches will now be giving plenty of bloom, and, if not already staked, ought to have some support without delay; if allowed to fall down and hang over the sides of the benches the plants will look unshapely when tied up with crooked stems. There are so many different methods of staking these plants that very little that is new can be said on that point. In past seasons we have used cane or deal sticks; this year we have substituted galvanized wire, cut in straight lengths two and a half feet long; black iron wire is drawn from end to end of the rows to tie the stakes to and steady them. Staked in this manner the beds have a much neater

appearance than where wooden stakes of various lengths and sizes are used.

So far we have not detected any signs of rust on our plants this season, but in some places the disease is ranging in a very virulent form. At one establishment, where some 30,000 plants are grown for the Boston market, and where in past seasons magnificent flowers have been produced, the rust has gained such a foothold that literally every plant in the numerous houses is badly affected; the disease is not confined to a few spots on the foliage, but the plants present a brown appearance and the rust runs up the flower-stems to the very calyx. Varieties thought to be rust-proof, such as Ada Byron, William Scott, F. Mangold, Hector and Nicholson, are all badly rusted here, although we have never seen them diseased elsewhere.

As a preventive of this serious disease we use the following mixture: One pound of sulphate of copper, dissolved in two quarts of ammonia in a two-gallon jar; when dissolved add another quart of water, and stir well. This mixture will keep for some time. A wineglassful to a twelve-quart can of water will make the solution strong enough to be used with safety on the plants, and a syringing every week or ten days should be given, so as to wet the plants thoroughly each time. Last year we tried other remedies without avail, but they were only used after rust had appeared. It is well to look over the plants occasionally, and if any rust is showing, the affected part should be carefully picked off. Only by eternal vigilance can the cultivator ward off this foe. Red spider is another insidious enemy which is liable to make its appearance now that more fire-heat is being used. Well-directed syringing will keep all spider away. The idea that Carnations dislike wetting overhead is absurd; the foliage may safely be syringed two or three times a week, even in midwinter, if the morning of a dry day is chosen for the operation, so that the plants will dry before nightfall. Where any of the plants are near the hot-water pipes it is best to give them a hosing every day.

About the middle of November we generally give our plants a little bone-dust or some chemical fertilizer, loosening the surface slightly with a hand-fork before applying it. Unleached hardwood ashes also make an excellent stimulant. The plants will be benefited by a scattering of fertilizer about once in two weeks. Liquid-manure we prefer not to use until nearer spring, when the plants require stronger stimulants.

Taunton, Mass.

W. N. Craig.

The Flower-garden in Late Autumn.

THE garden is now interesting from its promises for the future, though not yet entirely devoid of flowers. Even in a latitude as far north as our own, a well-stocked garden is really at rest only at short intervals during the hardest weather, and one garden season glides insensibly into another. Seldom does a hard frost keep the plants entirely dormant for more than three or, at most, four weeks in succession. At the end of this time the benumbed foliage, where any appears, will enliven under a genial sky, and the hidden bulbs continue their slow, but sure, progress. After the first of the year a few hours' sunshine will encourage the Snowdrops to expand their flowers, and these are soon followed by the Anemones, Irises and Scillas in a rapidly widening procession. At present the Aubrietias, the Arabis and the Saxifrages are happy with the new growth and the promise of flowers to come. All of the bulbs have made some start. Most of the Grape Hyacinths have been showing their foliage for some weeks, as have those of the Triteleias, and the leaves of the Snowflakes are appearing. The square leaves of Iris tuberosa are fully formed, and the Oncocylus Irises are growing in vigor. The leaves of the Spanish Irises and of the Algerian I. Tingitana will soon appear; and some of the hardy Cyclamens, having shown their flowers, will give their energies to the production of leaves. The Imperati Crocuses are well advanced, giving promise of a succession of their very early flowers. It will thus be seen that we have life in the garden, though few of the small bulbous plants are in flower except an occasional late Colchicum, Crocus or Cyclamen and some belated Sternbergias.

Bulbs generally are to me especially fascinating subjects, since they often possess such potentialities of beauty in flower, and curious habits as to dormancy and growth. They usually have a vigor of purpose and a capacity of life and reproduction which is as amazing as it is gratifying. I often feel a childish desire to dig up the bulbs in their growing season to study their growth. As all the hardy bulbs are, perhaps, not yet planted, it may be well to say that satisfaction will be found in planting them closely, especially if the plantings are not to

be permanent. Twice their diameter apart is none too close for the planting of most bulbs for effective display, as a mass is always more pleasing than a scattering of flowers with a wide showing of bare earth. From the notes of my friends and my own experience, I have never arrived at any satisfactory conclusion as to the proper depths to plant the various common hardy bulbs. I doubt if the depth be very material within certain bounds. If the larger ones are buried six inches and the smaller ones three inches they will not usually be misplaced. A mulch of manure on top of a bulb-bed seems usually to be the correct thing, though this is not essential here over the really hardy bulbs. A mulch of this sort is not pleasant under one's windows, and I prefer usually to leave the beds bare, and always do so if I happen to be forehanded enough to have caught a crop of seedling Poppies over the bulbs.

South of this, say from Washington to South Carolina, where the winters are more open, it would seem that winter gardening would prove quite satisfactory.

Elizabeth, N. J.

J. N. Gerard.

Chrysanthemums in the Open Air.

BESIDES the showy Sunflowers and Asters, which can be had in almost endless variety from August to November, we ought not to forget the Chrysanthemums, which literally come in hosts; for, until one has grown these plants, he has never experienced the pleasure of having flowers in real abundance. The large Rose-grower, of course, secures fair crops, but, at the best, the flowers are soon over, while Chrysanthemums from the same space can be cut in greater abundance, are more lasting and of an infinitely greater variety of form and coloring. Our professional friends who contribute to the horticultural papers keep us up to a high standard in the cultivation of these plants, which is quite correct from their point of aim, which is, of course, nothing less than perfection. I am glad to see, however, in gardens, that many Chrysanthemums are grown in a more natural way, to the evident enjoyment of the growers, for there is no more beautiful object in the garden at any season than a mass of well-grown Chrysanthemums in the usual keen weather of late October. By well-grown I mean well-branched plants, with thrifty leaves and judiciously disbudded. Of course, these plants should here have a sheltered location, with some protection ready when frosts appear. This is easily arranged, especially if glass sashes can be made permanent overhead. The object should be never to give artificial heat till actually necessary, and then as little as possible. This certainly requires more care and labor than the cultivation of plants in a greenhouse, but the flowers seem to me much more enjoyable, and rejoicing in a life and vigor quite their own. They will not be so large or perfect as the monsters which appear at the shows, but they arrange better and are more useful and lasting as cut flowers. While the overgrown flowers on stiff stems only seem interesting to me as examples of cultural skill, it is quite unreasonable to go to the other extreme and not disbud one's plants. Nature has endowed most varieties of Chrysanthemums with entirely too many buds, so that if all are left to struggle with each other for the needed food to develop them, none will be satisfactory. In selecting Chrysanthemums for outdoor exposure of this kind, one should try to secure the hardier kinds, like the "Old Yellow," examples of which can be found in every old country garden. Select, also, the earliest-flowering kinds, and avoid those with thick petals, which kinds are easily frosted.

Then, with the Chrysanthemums, one should, of course, grow the Cosmos, of which I am glad to find improved strains available. One from Henderson this year is a very large-flowered, rosy pink of a most satisfactory shade, and a great improvement on the old lilacs. Cosmos grows too tall naturally, and should be either cut or pegged down in the summer, which will bring it into a range of three or four feet at flowering time, when it can be readily protected.

Elizabeth, N. J.

G.

The Pocklington Grape.—Of all the Grapes to endure the waste of pollen by the heavy rains of 1894, the surest and best were Golden Pocklington, Moore's Early and Jefferson. On Lindley, Goethe, Vergennes and Iona some fruit set and ripened, but otherwise my vines were nearly bare, a few scattered bunches only were to be found. I am inclined to think that Pocklington is even a better Grape for general planting than has ever been claimed. It is rather later than Concord, I do not always get it ripe enough to show its best qualities, but it has a large, solid bunch of the handsomest fruit of superior quality. The vine is very hardy, the pollen very abundant, and the crop a sure one.

Ripening Pears.—This is a simple operation, but four-fifths

of the pears that reach market are rubbish, without color or flavor. Fall pears especially, such as Sheldon and Anjou, rarely ever get to the consumer in good condition. I have formed the habit of engaging such fruit ahead of time to special consumers, with an agreement to hold them in storage until fit for table use. The Anjous in this way may be ripened all the way from November 1st to the middle of January. They should be spread, about October 20th, in shallow bins in a dark, cool cellar or storeroom, away from draughts of air. They should be picked with tenderest care. As they turn yellow they can be removed for use. It is, of course, possible to hasten ripening by placing the fruit in a warm room.

Clinton, N. Y.

E. P. P.

Correspondence.

How to Move Large Maples.

To the Editor of GARDEN AND FOREST:

Sir,—It is my purpose to move some Norway Maples some six or seven inches in diameter and pretty thickly furnished with limbs at the top. The impression seems to prevail here that Maples should not be cut back or trimmed like other trees. I should like to know whether it would be proper to prune the trees, and, if so, any suggestions as to the proper method of cutting them back would be appreciated.

Westbrook, L. I.

C.

[In removing trees the roots are generally injured to a greater or less extent, and those which are bruised must be cut away; it is good practice to prune in the branches to a corresponding extent, so that there will not be more leaves than the roots can supply. Norway Maples of the size indicated cannot be removed without the loss of many roots, and pruning will be necessary. Such pruning will be perfectly safe, as these Maples are not injured more than any other trees by this operation. A great deal of this pruning can be effected by thinning out the inner branches, but there should be no hesitation about cutting back limbs where this seems necessary. When the ends of the branches are pruned they should be cut back to a limb, the wounds should be covered with coal-tar, and no stubs should be left to decay. In removing such large trees it is good practice to prune the roots back by digging a trench about the trees, say, five feet from the trunk, and if this trench is filled in with good soil new feeding roots will start out during the next year, so that the tree will be in excellent condition for removing in a year from the coming winter. Large trees can be removed with success, but it costs time and care and money. Persons who do not choose to go to the extra expense, however, can console themselves with the reflection that, as a rule, it is best to plant small trees, and that a tree ten or twelve feet high will probably be as large in ten years as one planted at the same time when it was twenty-five feet high.—Ed.]

Insects Injurious to Plants.

To the Editor of GARDEN AND FOREST:

Sir,—I have never suffered serious loss from insects, and, therefore, although I have glanced over what has been published in GARDEN AND FOREST and other papers about various insecticides, and the methods of using them, I have never made any serious study of the matter. I have vague ideas of kerosene emulsions and Bordeaux mixtures and arsenical compounds, but I have no full knowledge of when or how to apply them or what particular weapon to use against particular insects. Last year white grubs in my Strawberry-beds brought the matter home, and I must be prepared against them another season. My Plum-trees, too, suffered from curculio, and I am inclined to try something different from the old-fashioned jarring method. Where can I learn such rudimentary tactics as will enable me to make something like an intelligent war on my enemies?

Elizabeth, N. J.

S. C.

[The bulletins issued by the experiment station of our correspondent's own state contain all the information needed; and, besides these, there are so many good treatises now published that we can hardly pick out one from a dozen for commendation. A twenty-page tract has

been issued during the present year by the United States Department of Agriculture as Farmers' Bulletin No. 19, which will probably furnish all the instruction needed by a novice. It contains a list of the more important insecticides, with directions for their preparation and use. It also explains the habits and structure of our more common insect enemies, showing why the different applications are fatal to them, and giving the times and seasons when these should be applied. The bulletin was prepared by C. L. Marlatt, First Assistant Entomologist of the department, and it will be sent to any one who writes for it to the Secretary of Agriculture, Washington, District of Columbia.—Ed.]

The Pear-borer Again.

To the Editor of GARDEN AND FOREST:

Sir,—In your issue for September 19th, the specific name of the Pear-borer, there described, was doubtfully given as *Agilus acutipennis*. At that time it was believed that we had to do with an American species, and the possibility of another European importation had not been considered. Recently my attention was called to an account, published in the volume of the *Entomologische Nachrichten* for 1893, summarizing investigations made in Germany on *Agilus sinuatus*, Olivier, as a pest on Pear-trees in that country. Careful comparisons made show the complete identity of that insect in habits and structure with the species observed by me in New Jersey, and no doubt remains that we have to do with another imported pest. It is a practice among nurserymen to import Pear-stocks from Germany and France for the purpose of grafting upon them American varieties, and I have succeeded in locating the probable point of original importation in the region now most infested. The time cannot be certainly fixed, but does not date back more than ten years. I find, also, that the insect is more widely distributed than I believed even a month ago, and it extends northward to Lake Hopatcong, at least. It is also asserted that the species has gained a foothold in New York state, in the vicinity of Marlboro, and it behooves growers in that region to examine their orchards carefully, to ascertain whether it is really there. This is another illustration of the dangers of careless importation of stock by nurseries, to which I called the attention of the Society for the Promotion of Agricultural Science.

Rutgers College.

John B. Smith.

Salt-water as a Preventive of the Yellows.

To the Editor of GARDEN AND FOREST:

Sir,—In many Peach-growing sections the trees are being rapidly destroyed by the disease known as "yellows." In Kent County, Delaware, for example, the trees in several large orchards have been grubbed out and burned within the past two years on account of this disease. It has been rapidly spreading throughout that part of the state, and unless it can be eradicated by the prompt destruction of diseased trees or by some other practical method, Peach-growing will soon be a thing of the past in Kent County.

Early last spring the tides were very high along the coasts of Delaware and Maryland, and in several instances Peach-orchards were overflowed by the salt-water. The cold weather which prevailed at the time of these high tides caused the destruction of the fruit-buds in many of the Peach-orchards on the peninsula. A few orchards produced a fair crop of excellent fruit, and as they were in some instances located in the sections where the overflow occurred, the report was soon spread abroad that only those trees which were growing upon the overflowed land produced fruit and were free from yellows.

In order to ascertain the facts concerning the matter, I made a trip during the peach season among the bearing orchards in Delaware and along the eastern shore of Maryland.

In what is known as Quaker Neck we found many orchards yielding fair crops of excellent peaches, but many of these trees were on land which the water never overflows. In one orchard, a portion of which was on low land which had been overflowed, we could see no difference in the yield or the quality of the fruit between the trees whose roots had been treated with salt and those upon the high land, although the foliage of the trees on the low land was much more vigorous and of a deeper green than that of the trees on the high land. From what we learn the overflow of salt-water appeared to have little effect on the production of fruit, and unfortunately on the prevention of the yellows, so there is little hope that

any salt-water treatment will cure this disease. The fruit yield in this region was due rather to good cultivation of the orchards and to their proximity to water, which prevented the destruction of fruit-buds during the cold weather.

Experiment Station, Newark, Del.

M. H. Beckwith.

The Pernicious Scale on Long Island.

To the Editor of GARDEN AND FOREST:

Sir,—The San José scale was observed first in the market at Jamaica on some Bartlett pears said to have been grown on the island. The scale was also conspicuous on some fancy varieties of pears exhibited at the Queens County Fair, and by tracing this fruit to its source some of the infected nurseries were located. We have found the scale on Pear, Apple, Peach and Quince stock in several nurseries. Some of the nurserymen think they have had this same scale on their young trees for the past twenty years, but the indications are that it has been introduced within the past two or three years. Some of the large nurseries of the state are undoubtedly centres of infection.

Nurserymen here evidently do not realize that this is a serious pest. They are used to seeing on their stock the native scale insects, which cause no marked injury. They apparently do not realize that large sums of money have been expended in efforts to exterminate this pest in California, and that it will be a more dangerous enemy here than the Colorado potato-beetle unless prompt efforts are made to suppress it. True, we probably have a better chance to fight the pest here during the winter than nurserymen have in California, but it will require an organized and very strenuous effort to overcome it.

This scale is now found in Virginia, Maryland, New Jersey and New York; in fact, in the very centre of the nurseries of the Atlantic coast. Nurserymen should make it a rule among themselves to put all stock through a vat of kerosene emulsion.

Every fruit-grower or nurseryman who discovers scale insects of any kind on his trees should send samples without delay to the nearest trustworthy entomologist.

Jamaica, L. I.

F. A. Sirrine.

[Mr. Sirrine, together with Mr. V. H. Lowe, is now studying insect pests on Long Island under the direction of the New York Experiment Station.—Ed.]

Exhibitions.

Chrysanthemums at Short Hills, New Jersey.

JUDGING from the crowds of people seen at Short Hills Saturday, the interest in Chrysanthemums is not waning. The fall show at the United States Nurseries has evidently become a fixed festival much appreciated by flower fanciers, who visit the exhibitions in constantly increasing numbers, and incidentally add to the vivacity and interest of the floral display.

As usual, the Chrysanthemums this year are massed in the two upper houses of the main block, the upper house being devoted to specimen plants in pots, and the lower one being filled with those planted out. In this house the centre is now occupied with a wide bench in which the plants have been grown in the modern method of shallow beds. Three inches of earth seems the standard bed in which the up-to-date florist succeeds in producing the most perfect Chrysanthemums, as well as marvelous Roses.

About the only criticism one would be inclined to make on these plants is that possibly the foliage and stems are too robust. But this seems to be the present fancy with growers, who always point with pride to a specially rigid stem, which holds a mop-like head with all the grace of a poker. However, in this and the solid beds at the sides were thousands of well-finished flowers, comprising an assortment of the most modern and popular varieties, but largely the products of this establishment. I noticed here, especially, many good flowers of the novel variety "Pitcher & Manda," which appears to keep up the fine form in which it was shown last season. There were also many good flowers of Mrs. Alpheus Hardy, recalling the sensation which inaugurated this nursery. Five thousand square feet of Chrysanthemums, as seen in the upper house, is a display the equal of which is seldom seen, except at great exhibitions.

Among the flowers of all sizes, shapes and colors, the special interest, of course, centred in the new varieties of the nursery, which are to be first offered the coming season. Perhaps the

most valuable ones were two early kinds, which were ready for cutting October 5th, these being J. H. Troy and John E. Lager, the former being white, and the latter a deep yellow of medium size, rather in the way of Ivory, but with wider petals, somewhat reflexed laterally. The other novelties were also in yellow and white, all of fine forms and the largest size. Miss Georgiana Bramhall is a delicate pale primrose, beautifully incurved, in perfect form and largest size. Miss Georgiana Pitcher is similar in form, with broader petals and richer yellow. Bonnie Marjorie, with these, makes a trio of yellows, its color being intermediate. The best white shown was Mrs. Twombly, one of the 1894 introductions. Mrs. Pullman, shown as a new yellow, does not seem to differ materially from Sunflower. Of odd colors, Dorothy Toler was the most promising—a full flower, well rounded, with cupped petals of a purplish pink shade. The best dark-flowered variety shown was Mrs. A. J. Drexel, a very rich red reflexed variety, one of the older introductions.

Among novel forms seen was a Japanese Anemone-flowered variety, with variegated foliage. The variegation was very white and distinct. We noticed also the single variety Daisy, to whose simple beauty we have called attention for several seasons. Looking at this collection, representing the best products of the florist's art, grown to the highest perfection, it seems to me that we have about reached a point beyond which we cannot expect much improvement in size or many valuable novelties in form. In fine whites and yellows we have a superabundance. Only pink flowers of perfect purity and delicacy are yet somewhat scarce. I suppose big bouncing Chrysanthemum flowers will always be appreciated, both by the growers and the public, but I believe that many flower-fanciers would be intensely interested in an exhibition of a comprehensive collection of the many rare, odd and varied forms known only to collectors, and which do not seem to have interested the commercial growers.

The Chrysanthemums at these nurseries occupy only two houses among a great number, which are fairly packed with choice and rare greenhouse plants, enough to interest a plant lover for days. The Orchid houses were more interesting than we have known them at this season, not specially for the great profusion of flowers of all the species due at this season, but for vigor of plants. The superintendent, Mr. Lager, pointed with just pride to the fact that the plants which he had personally collected were making stronger growths under cultivation than they had shown under their native conditions. This was certainly true of the Cattleyas and Odontoglossum Crispum, the latter being at present especially strong. Mr. Lager has grown the Cattleyas unshaded, and they are generously responding to such sensible treatment with larger pseudo bulbs.

New York.

Quis.

Recent Publications.

The Biggle Berry-book, a Treatise on the Cultivation of Berries. By Jacob Biggle. Illustrated. Philadelphia: Wither Atkinson & Co.

Readers of the *Farm Journal* have long been familiar with the practical quality of Judge Biggle's teachings in all matters relating to the farm and garden, and this little book of 126 closely printed pages contains in a condensed form not only all the more important lessons in the culture of small fruits which long experience and close observation have taught the author, but it has gathered up in short quotations the opinions of a great number of the leading fruit-growers of the country on all the important questions of practice. The most approved methods of propagating, cultivating and marketing gooseberries, raspberries and currants are explained, but without much detail—the greater portion of the little hand-book being given up to the Strawberry. The preparation of the ground, the different methods and times for planting, the enemies of this berry and how to control them are discussed in a way which any novice can comprehend, while the comparison of the different varieties, new and old, with a statement of their various merits and deficiencies, is unusually complete and fair. The colored plates are actual helps to the text, and so in general are the other illustrations, so that altogether this little book can be safely trusted by the beginner who needs sound elementary instruction given in a clear and homely way.

Notes.

A Chrysanthemum exhibition, under the direction of Messrs. Siebrecht & Wadley, will be held at the Eden Musée from the 8th to the 18th of this month.

It is a striking proof of the unusual mildness of this autumn that a plant as tender as the Heliotrope is seen blooming in the open air on Election-week in the latitude of Boston.

According to some analyses made by the Chemist of the Pennsylvania Experiment Station, the chestnuts which an acre of trees would yield in an ordinary season would have a greater food value than an average yield of wheat or of corn.

We have received the report of the New York Experiment Station for 1893, and the report of the Cornell University Experiment Station for the same year. Both of them contain a great deal of matter of permanent value. Unfortunately, the last-named report has neither an index nor a table of contents, and its usefulness as a book of reference is greatly impaired by this omission.

Clematis paniculata attracts so much attention for the beauty of its flowers that its charms in late autumn are not thoroughly appreciated, but it has a habit of holding its thick leaves very late, and they are just now beginning to turn to rich coppery tints, while above them the abundant red seeds, with their light feathery tufts, give the final touch which is needed to make one of the most beautiful combinations which the season can offer.

In reference to the Dwarf Red-flowering Chestnut, *Æsculus Pavia*, to which allusion is made in the "Plant Notes" of this issue, Mr. Andrew S. Fuller writes that plants of this species, which he had raised from seed grown in Texas, have proved hardy in his garden in New Jersey. His plants are now ten years old and are about four feet high. Seedlings from *Æ. Pavia* flower when they are only two or three years old and not more than twelve to eighteen inches high.

The new Chrysanthemum Mayflower is a white variety of the largest size and perfect purity of color, and massive without being coarse. *Minerva* is a fine, new incurved flower of a particularly brilliant lemon-yellow. The stems of both of these varieties are strong enough to hold the heads, and yet they are not too rank. These varieties have not yet been distributed, but Mr. John N. May, who has the stock of both, is sending them to this city in admirable condition, and they are now bringing the highest prices of any varieties in the market.

Hot-house tomatoes are already in market, almost before there has been a killing frost. They are beautiful in appearance, and their superiority over the field fruits is shown by the fact that they command from forty to sixty cents a pound. Hot-house cucumbers, even in competition with the still abundant outdoor crop, sell for \$1.50 a dozen. House-grown mushrooms sell for \$1.20 a pound, while field-mushrooms bring seventy-five cents. Late-crop eggplants, from Florida, bring \$3.00 a dozen. In the general market the few Spitzenberg apples of first quality which come to this city bring the highest price of \$4.75 a barrel. Late quotations of American apples in England show that Newtown Pippins still retain their supremacy there at \$7.50 a barrel.

This is the midseason of Chrysanthemums, and the earlier market varieties are practically gone. The leading kinds now offered for sale among the whites are Ivory, Niveus, Queen and Minnie Wanamaker. Ivory brings about half as much as the others on account of its shorter stems. It is very profitable, however, to the growers, since it yields most abundantly and is easily grown. Of the pink varieties Mrs. E. G. Hill was the earliest and is still in good form. Vivand Morel is the most abundant and Ada Prass is the latest. Good yellow Chrysanthemums are now somewhat scarce, although this color and white are the most popular. The best varieties now on sale are W. H. Lincoln, Major Bonnafon and Challenger. Reds of any shade are very scarce, about the only variety seen in any quantity being George W. Childs.

The last report of the Pomologist in the Department of Agriculture contains a description of a new variety of Kaki, or Japanese Persimmon, named Gobey. The tree is said to be a rank grower of spreading habit and very prolific. The fruit is described as conical, bright red, almost seedless, of excellent quality and so large that many of the single specimens weigh more than a pound. One would think that a fruit of this size and appearance would soon make its way in popular favor, but the fact remains that the older varieties do not sell any better in this city than they did ten years ago. A small con-

signment came here from Florida last week and a small lot of very beautiful ones from Alabama. They hang heavily, however, on the hands of the dealers.

At the Chrysanthemum exhibition to be held in Springfield, Massachusetts, next week, beginning on the 13th of November, the Hampden County Horticultural Society, in addition to the usual competition between individuals, offers a prize of \$50.00 in gold for the best vase of one hundred blooms exhibited by any regularly constituted florists' club or horticultural society. These displays are to be known as the Philadelphia exhibition, the Boston exhibition or the exhibit of any other city which purposes to compete. No restriction is made as to the number of varieties, and the exhibitors are at liberty to exercise their own judgment as to what kind or kinds will make the most attractive vase of flowers. This will be known as the National Prize. The plan, we believe, was originated by the Pennsylvania Horticultural Society, and it seems to be a good one for insuring an interesting display.

In a bulletin on Sweet-potatoes lately issued by the Louisiana State Experiment Station, Mr. Burnette, the horticulturist, says of different varieties that the greatest acquisition so far is one known as Vineless. It was found on a Mississippi plantation in 1884, and has since then been gradually distributed and propagated throughout the south. It is probably a sport of one of the common Yams, and is also known as the Early Bunch or Bunch Yam. The tops are short, never reaching three feet, and often not over more than two feet in length, stocky and compact, with large deeply cut and very dark leaves, and smooth medium-sized roots. The plants endure drought well, and on account of their short tops can be cultivated late in the season, which is often an important factor in the yield of a crop. The Vineless is a prolific and early variety, and the roots keep well and possess high edible quality.

Cattleya Bowringiana, on account of its free habit of growth and its abundant flowers, naturally invites experiments in crossing, and it has already become the parent of handsome hybrids. The latest one of which we have an account is given in a late number of the *Orchid Review*, in which case pollen from *Lælia pumila* was used, so that the plant belongs to the rapidly increasing number of *Lælio-Cattleyas*, and has been called *Parysatis*. Mr. Seden sowed the seed in 1888, and the first flower was produced in five years. The plant is described as about six inches high, with flowers intermediate in shape between its two parents, petals two inches long by one and a quarter broad, and the lip open as in the pollen parent, although it becomes more convolute as the flower grows older. The sepals and petals are of bright rose-purple; the front half of the lip is a deep magenta-purple with a pale throat, and altogether it is a beautiful little plant.

The street-trees of various towns in New Jersey have been so seriously affected during the past summer by certain insects, that Professor J. B. Smith, of the State Agricultural College, has thought it best to answer numerous requests for relief by a special bulletin. Of the insects injurious to shade-trees he speaks of the Elm-leaf beetle, the imported Elm-borer, or the leopard moth, and the white-marked tussock moth, as the most troublesome. The last insect can be kept in check with comparatively little trouble by removing the masses of eggs in the early winter, which are prominent on the bare trunks and limbs. The first one can be controlled by two or three sprayings of London purple, Paris green, or, perhaps, still better, with arsenate of lead. It seems to be a great task to spray a large Elm or a number of trees in a park or town, and yet Professor Smith says that the Elms on the college campus at New Brunswick, which are as large as most of those in the state, have been sprayed twice and well protected during the past year. On very large trees it may be impossible to reach every point so as to kill all the insects, and some will become full-grown and make their way down the trunk to the base of the tree. When this is noticed, a strong brine, whale oil, soapsuds, or diluted kerosene emulsion can be poured on the ground about the base of the tree for a distance of two feet and repeated at intervals of five days, as long as new additions are noticed. The imported Elm-borer, *Zeuzera pyrina*, is a serious pest, especially in Newark, where it has attacked all species of Maple and Elm, as well as Sweet Gum, Tulip-tree, Linden and others. This insect seems so difficult to reach that Professor Smith advises the cutting down of badly infested trees and burning them. Fortunately, the electric lights in some cities attract these moths, and large numbers of them perish in this way. The bulletin is an admirable summary of what needs to be known wherever any intelligent attack upon these three insects is meditated.

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The Pinetum at Wellesley.

THERE are few large collections of Conifers in this country where the trees have attained an age which enables a student to form a satisfactory idea of their appearance and behavior as they reach or approach maturity. The Pinetum, planted twenty years ago by Josiah Hoopes, in West Chester, Pennsylvania, taken in connection with the trees planted by his father twenty years earlier, is most interesting and instructive, and it contains specimens which cannot be matched elsewhere in the country. At the Arnold Arboretum a most comprehensive collection is already made, but the trees are still in their infancy; there are some noteworthy private collections, too, like that of Mr. Charles A. Dana, on Long Island, but the Pinetum at Wellesley is, beyond question, the most complete and satisfactory which has yet been established in this country. It is not only unsurpassed in the number of species and varieties it contains, but ever since the trees were planted they have had persistent, intelligent and affectionate care, so that the individual specimens are as conspicuous for vigor and beauty as the collection is for its richness in varied forms.

The story of the Wellesley gardens has been told more than once in these columns, and Mr. H. H. Hunnewell, the proprietor of the famous place, is well known as the most generous patron of horticulture which this country has yet produced. As long ago as 1851, Mr. Hunnewell began to transform some forty acres of his large estate into an ornamental garden. It was rather an actual creation than a transformation, for the land was flat and featureless, apparently an arid waste, except where it was covered with a tangle of scrubby Pines and Birches. Hardly a tree then standing on these acres now remains, a conspicuous exception being an Oak which had already reached splendid proportions, and which has kept on growing in rugged strength and in nobility of expression. The grounds at Wellesley attract visitors from all over the country who wish to inspect the trim Italian garden, or the other multi-form features of the place, but Mr. Hunnewell set out to make it especially strong in Rhododendrons and Conifers. At that time little was known of the possible beauty of the broad-leaved evergreens for outdoor cultivation here,

and it was generally supposed that the choice Rhododendrons were unable to endure the rigor of our winters or the drought of our fervid summers, but the proprietor of Wellesley persisted in his purpose and has done more, perhaps, than any other man to demonstrate the perfect adaptability of many varieties with the brightest-colored flowers to the trying climate of New England.

For the purpose of a pinetum the light loamy soil of the Wellesley garden, resting on a porous gravel, which insures perfect drainage, is admirably suited, while the liberal employment of peat and certain other fertilizing material on the surface gives the trees the food they need. From the outset Mr. Hunnewell had grown Conifers, but it was not until 1867 that he prepared an acre or two of ground especially for the plantation in which he proposed to cultivate as many species and varieties as he found able to make a satisfactory growth in a New England climate. He began with about two hundred small nursery-trees, and year by year increased their number and enlarged the area of ground, until now, upon something more than ten acres, can be found four hundred well-grown specimens, some species and varieties being represented by single individuals and others by several. Of course, many exotics have failed to adapt themselves to their new surroundings, and one after another they have been discarded when all attempts to nurse them into vigorous life had failed. Of late years, too, as the trees reached out and began to interfere with each other, aggressive individuals here and there have been cut down to furnish space for the development of their neighbors. This has cost much labor and stern determination, for some of the trees which have been felled were quite as vigorous and promising as any that were left. One who has watched the growth of a tree for a quarter of a century naturally shrinks from destroying it, but Mr. Hunnewell has cut down several Nordmann Firs, for example, which were perfect specimens, thirty feet high, because they began to trespass on their neighbors, and he now plainly sees the wisdom of this course. The trees are planted partly on the plateau or general level of the garden, partly on ground which slopes somewhat abruptly into a ravine, so that there is a considerable variety of surface, and a series of surprises awaits the visitor who drives through the winding roads. It is difficult to select any single view as representative of the whole, for every rod furnishes a fresh picture and discloses new points of interest. Our illustration on page 455 was chosen from a number of photographs, not because it displays in any marked degree the excellence of individual trees, or because of any special superiority in their grouping, but mainly because the camera chanced in this one to catch the erect figure of Mr. Hunnewell, and show how lightly he bears his more than fourscore years.

Without giving a catalogue of the names of the different Conifers which seem to enjoy life in this beautiful place, it may be said that, including some garden forms with well-established species and varieties, there are rather more than a hundred represented here. The largest tree is a Norway Spruce, which was planted forty-two years ago, and it is now eighty feet high, with branches spreading over a circle sixty feet in diameter. The White Pine in the collection planted about the same time is not as tall, although there is one on another part of the grounds which is considerably larger. An American Hemlock, seventy feet tall; a White Spruce, several feet taller; Cephlonian and Nordmann Firs, planted in 1860, and forty feet high; an Oriental Spruce almost as large, and a Japanese Larch, *Larix leptolepis*, more than fifty feet high; a Douglas Spruce, thirty-six feet high; *Abies concolor*, thirty feet high, and a Cilician Fir of about the same size; a *Pseudolarix*, more than twenty feet in height and with a trunk nearly four feet in circumference, are a few of the specimens which show how rapidly this family of trees can develop in New England. All the Conifers which can be found in other gardens, especially forms of *Taxus*, *Thuya*, *Tsuga* and the like are seen here at their very best with many plants like *Abies nobilis*, *Abies*

magnifica and *Abies amabilis* trees of our Pacific forest-flora, which will only live in New England when cared for with exceptional intelligence. Of course, there are many smaller trees and younger ones, for whenever a new Conifer is to be had it is at once put on trial at Wellesley. Even if Mr. Hunnewell were planting simply for his personal pleasure, these nurslings would not be neglected, for he does not believe that the sole delight in a tree comes from sitting under its shade when it is fully grown. The skillful and hopeful planter finds a genuine pleasure in watching the very seedlings in his frame, and his attachment to them strengthens as they develop under his care. Each tree in Wellesley, from the smallest to the largest, is repaying its owner every day for any care or anxiety it has cost. And apart from the delight and instruction which this unique plantation gives to hundreds of visitors, to whom its treasures are generously thrown open, it is an unfailing source of pleasure to its proprietor, who enjoys it with a relish which grows keener every year.

Gardening at Newport.

IT is difficult to convey in words the individuality of a beautiful landscape, especially if it is not very sharply or forcibly marked in character. Keen sensibilities, acute powers of analysis, and a trained command of language are required if a place which is individualized by its gentle contrasts of form, its delicate scheme of color, and its subtly changeful atmospheric effects is convincingly to be described. Therefore, we have read with much admiration the description of the natural beauty of Newport, in summer and in winter, which Mr. Brownell gave in the August number of *Scribner's Magazine*. We could not do it justice by fragmentary quotations, but we can recommend it as sure to satisfy those who know and love Newport, and to give a charming and veracious idea of it to those who have never beheld it.

Mr. Brownell rightly says that you miss the quality of Newport's beauty entirely "if your own faculties are not in a state of real activity. . . . The appeal of the place is to an intelligent rather than a purely sensuous appreciation." This means that only an eye accustomed to the analysis of beauty can fully understand and value it; and doubtless Mr. Brownell's own description is so adequate because he is a critic of art of wide experience. But this fact only makes more surprising his insensibility to some of the mistakes which man has committed on this beautiful spot. One compares with astonishment his praise of Newport as Nature made it, and his praise of the way in which the summer resident has "improved" it. "Newport," he says, "owes to the summer resident not only a high standard of social life and a decorous employment of leisure, but also an æsthetic ideal of architecture and landscape-gardening." This statement he qualifies by finding fault with many of its buildings, confessing that "architecture has, perhaps, been as much travestied as illustrated. But," he then adds, "there is no doubt at all of the immense service to the place rendered by the summer resident's landscape-gardener, who has covered broad acres of it with lawns and boscajes, clumps of trees and bushes, heaps of flowery luxuriance walled in by Privet and Buckthorn, and has, more than any other agency, except the climate and the natural lay of the land, exhibited the potentialities of elegance inherent in these latter."

We think that Mr. Brownell's strictures upon Newport architecture might well have been more strongly couched, but his failure to criticise with more explicit severity in this direction is less a matter for regret than his unstinted bestowal of praise upon Newport gardening.

One fault displayed by Newport architecture can certainly not be charged against its gardens; they show no distressing degree of discordant variety. In fact, they sin in the opposite direction. Variety is one of the most precious things in art when it can be secured without discords; without the impairment of general harmony. Any

well-laid out public park shows us that, in gardening-art, perfect unity and beauty of general effect may be achieved with never a repetition of the same scene; the same arrangement of trees and shrubs; the same choice of floral ornaments. And a similar result might have been achieved at Newport even with a succession of grounds as limited in size as is usually the case there. Had competent landscape-artists designed these grounds, or had their owners felt any genuine personal interest in them, and been able to express it with any modicum of horticultural knowledge and artistic skill, there might have been a long succession of gardens, each individually arranged and furnished; each displaying fresh beauties, novel effects, distinctive characteristics, yet none of them "swearing" at their neighbors, for the reason that there is no such bold opposition between one good gardening scheme and another as there may be between architectural schemes even of the most excellent sort.

But a quite wonderful degree of monotony marks Newport gardens. It is due in part to the general lack of any definite scheme at all—any real appreciation of the special character of the site; any clear intention to produce well-balanced, well-marked, harmoniously beautiful effects; any desire to accommodate these effects to the character of the house or to the chief points of observation supplied by the features of the house, or the line of the street or the private road. And in part it is due to the perpetual repetition of the same short list of ornamental plants, each owner striving, apparently, to possess what his neighbors possess—to be in the current horticultural fashion. The average Newport garden—and there are few exceptions—lacks both coherence and personality in design; and its contents bear witness not so much to the tastes of its owner as to the changing floricultural currents of the year.

Yet this monotony would be less displeasing were the general local ideal with regard to what such gardens should be more sensible, and more sensitive to the dictates of local Nature. One sees no difference between the gardening ideals which dominate here and those which dominate at inland places like Lenox or in the villa suburbs of Boston or Philadelphia. When this is said, and when Mr. Brownell's description of the peculiar quality of Newport's natural beauty has been read, it will be understood that the result must be far from satisfying, because true harmony between Nature's work and man's cannot under such conditions exist.

True artists in gardening would have appreciated the individuality of the spot, in its lines, its colors, its outlooks and its atmospheric conditions, and would have tried to conform their own schemes thereto, while not disregarding the fact that architectural elements are, in many parts, dominantly conspicuous. Often, in deference to the prominence of the house and the paucity of the grounds, they would have chosen some formal type of garden, at least on sites which are encircled by straight lines of street. Then, their naturalistic designs would have been very simply cast, in deference to the simplicity of Nature's forms; and, especially, their color schemes would have been reticently managed, to harmonize with the delicate opalescent quality of Nature's coloring.

But, instead of this, we see attempts at elaborate landscape schemes, confined within a few rods or even rods of ground. We see an overcrowding of vegetation, at war with the wide, open, airy placidity that makes the special charm of the natural landscape. We see no effort to produce artistic effects with materials drawn from local vegetation, but an inartistic huddling together of exotics from every part of the world. And we see the most lavish use of the brightest, crudest colors which commerce can supply. Nothing could be more out of place in any small naturalistic garden than large pattern beds, stiff in line and glaring in color; they are especially inappropriate at Newport, because Newport's natural coloring is so tender and delicate, and yet they are used here with a prodigality in number, a puerility in design, a disharmony in brilliant hues,

and a lack of skill in placing, which can hardly be paralleled.

Nowhere else has Nature worked more skillfully to prepare a place for a pleasure resort; but rarely has man, with much money at command, done more to contradict and obscure her intentions. Newport seems to express ostentation rather than true elegance, a feeling for the sumptuous rather than a feeling for the beautiful, the desire to be lavish and conventional rather than the desire to be artistic and individual. And in producing the totality of this expression its gardens play an even more prominent part than its houses.

Foreign Correspondence.

London Letter.

ALBERTA MAGNA was distributed as a new plant in 1891 by Mr. W. Bull, but it had been in cultivation at Kew several years before that time, and there is now a plant in the winter garden seven feet high, besides smaller specimens in pots. One of these is now flowering for the first time in cultivation. The genus belongs to the order Rubiaceæ, and while *A. magna* is a native of Natal, the only other species known is a native of Madagascar. The leaves of *A. magna*, which promises to grow into a small tree, are not unlike those of the Cherry Laurel, and the flowers, which are in crowded terminal panicles, are tubular, an inch long and colored bright crimson. When fully grown the plants will, no doubt, produce larger heads than these now at Kew, and as the flowers are succeeded by winged fruits of a bright red color, the plant has a double attraction. From its behavior at Kew it is possible that it will bear a few degrees of frost. It is evergreen, and pleasing to look at even out of flower.

PINUS AYACAHUITE.—Although introduced into English gardens fifty years ago by Hartweg, and again by Roezl, this handsome Mexican Pine has not found any recognition among growers of Coniferae, even in those parts of the country where it would succeed. Messrs. G. Paul & Son, of Cheshunt, have, or had, a tree of it about forty feet high, which coned in 1882, and there is a healthy example of it in the garden of Mr. Freeman-Mitford, at Batsford, near Stratford-on-Avon. This week a cone-bearing branch of it has been sent to Kew by Mr. John Tremayne, of St. Austell, in Cornwall, who writes that it was planted in his garden about forty years ago, and has always borne the name of *P. nigricans*. It is now a large tree, "a far better thing than any *P. excelsa* I have ever seen," but it does not often produce cones. The specimen sent bore a cluster of three cones, each a foot long and four inches wide, slightly curved, the scales large and open. In Mexico it grows to a height of one hundred feet, and is not unlike *P. excelsa*, to which it is closely allied. There are many places in the United Kingdom and elsewhere where this fine Pine would thrive as well as it does at St. Austell.

BEGONIA MARGARITACEA.—This is a new hybrid between *B. coccinea* (corallina) and the bronzy-purple-leaved variety of *B. incarnata*, known as Arthur Mallet. It was shown by Messrs. J. Veitch & Sons, the raisers, this week, and received an award of merit on account of the pretty coloration of its leaves, which are dark purple, profusely spotted with pinkish white. It is likely to become a favorite foliage Begonia, and from the floral characters of both its parents it ought to be equally attractive as a flowering plant.

MOMORDICA MIXTA.—Fruits of this fine tropical Gourd have been grown this year for the first time at Kew. I noted the male plant some time ago as a handsome stove-climber well worth growing for its large, velvety, cream-yellow and maroon flowers, but these are comparatively unattractive by the side of the brilliant orange-scarlet fruits, which are about the size of ostrich-eggs, and covered all over with spiny points suggestive of sea-urchins. The plant is perennial, and has a tuberous rootstock, from which the annual stems grow to a length of

twenty feet or more. Of course, both male and female plants must be grown, and the flowers fertilized artificially, if the fruit are to be developed in cultivation. A piece of stem bearing three fruits within a few inches of each other was shown at the Drill Hall this week, and attracted the attention of decorators as well as pomologists. The species is a native of the east, including Cochinchina, another name for it being *M. Cochinchinensis*.

BENINCASA CERIFERA, the Chinese Wax Gourd, was also shown from Kew. This is one of the most striking of the big-fruited Gourds grown over the Water-lily tank, its fruits being two feet long and about nine inches in diameter, covered with erect bristly white hairs and encased in a thick layer of gray-white, wax-like bloom, which is said to have some economic value in China. It is also known as the White Gourd. Another name for it is *B. hispida*.

TOURNEFORTIA CORDIFOLIA, which was distributed by Monsieur Bruant two years ago as a new Boragewort of shrubby habit, with large cordate leaves and crowded terminal-branched racemes of Heliotrope-like white flowers, is now flowering at Kew for the first time. Whatever it may be like in South America, where it was found by Monsieur E. André, who introduced it, there is little charm in it as a flowering plant here, although the leaves are large and handsome, and there is the possibility of crossing it with Heliotrope, as suggested by Monsieur Bruant. The leaves are cordate, six inches by four, on petioles two to three inches long, and they are of a rich dark green color, with the texture of the leaves of common Heliotrope. There is a figure of the plant in *Revue Horticole*, 1887, page 128, which is reproduced in Monsieur Bruant's Catalogue for 1892.

RICHARDIA ETHIOPICA, the well-known Calla, is proving a useful aquatic in the south of England. I have seen and heard of it this year in several gardens, where it grows on the side of lakes or ponds, the roots being planted a foot below the surface of the water, so that the frost cannot reach them. One grower has them in water two feet deep, where they have stood several winters and flowered well in the summer. The *Gardeners' Chronicle* this week reproduces a photograph of a large piece of water in Trelisick, Cornwall, showing a large expanse of *Richardia* all along the margins and crowded with flowers. *Primula Japonica* is equally fine on the banks near the water. I have seen this plant as thick as Clover round the sides of a lake in Cornwall. The *Richardia* as a water-plant is a good "wrinkle." In south Africa it chokes the streams and fills the ditches and swamps. It is quite different in habit from the other species of this genus.

MILTONIA BLEUANA ROSEA is a third variety of the hybrid *Miltonia* raised by Monsieur Bleu, of Paris, from *M. vexillaria* and *M. Roezlii*, and which flowered for the first time five years ago, the seeds having been sown in 1884. The same cross was effected by Messrs. J. Veitch & Sons and flowered in 1891. The flowers are four inches across, similar in construction to those of a good variety of *M. vexillaria*, white, with a dash of red-purple at the base of the segments. A variety called *aurea* has a conspicuous blotch of yellow on the disk of the labellum, and this new variety *rosea* is remarkable in having a suffusion of rose on the greater part of the petals. A plant of it, bearing a six-flowered spike, was shown this week by Monsieur Jules Hye Leysen, of Ghent, and obtained a first-class certificate. If this hybrid proves to be as easily grown and multiplied by division as *M. vexillaria* it will be a most useful addition of what are here known as Pansy-flowered Orchids.

ONCIDIUM ORNITHORHYNCHUM ALBIFLORUM is a beautiful Orchid when grown and flowered as Mr. R. J. Measures exhibited it this week, his plant carrying no less than seventeen spikes, bearing about seven hundred flowers. It was awarded a first-class certificate, not because it is new, for it was first flowered by the late Mr. John Day in his famous Tottenham collection twenty-one years ago. The type is a well-known cool-house Orchid, its warty-lipped rose-lilac flowers, with a smell suggestive of rhubarb, being com-

mon in collections. But this white variety, white, that is, with a yellow "wart" or callus, is a *rara avis* in English collections, and Mr. Measures' fine specimen is tantalizing to those who would like but cannot get a plant.

MASDEVALLIA ATTENUATA and *M. LAUCHEANA*, both new introductions, with small white flowers tipped with green, were shown in flower this week by Messrs. H. Low & Co., and were awarded botanical certificates.

NEW CHRYSANTHEMUMS.—The following received awards of merit this week: *Madame C. Molin*, a fine Japanese variety, broad petaled, bold in form and colored deep golden yellow, tinged with red-brown; *Louise*, also a Japanese variety, with large flowers, the petals inclined to incurve, white, tinged with rose on first opening; *Reine d'Angleterre*, a Japanese reflexed variety, elegant in form and colored rose-purple; *Préfet Robert*, an incurved Japanese variety, colored deep maroon, with a silvery reverse; *M. A. De Lacvivier*, of similar character to the last, colored carmine red, with bronze yellow reverse; *Hairy Wonder*, a well-named Japanese variety, the segments being covered with hairs, the flowers large and colored cinnamon-red; *Miss Goschen*, a large-flowered Japanese variety, with flat, broad, clear yellow petals; *Admiral De Vellau*, a deep yellow, large-flowered Japanese reflexed variety of considerable merit; *Mrs. H. J. Jones*, an incurved Japanese variety, broad petaled, white, with a creamy yellow tinge; *Duchess of York*—the handsomest and most distinct of the new varieties shown this year. It is pure Japanese, the flowers large and full, the petals curled and the color a bright clear soft yellow. The plant is said to be of good habit. It was raised in Scotland and is now in the possession of Mr. Jones, of the Ryecroft Nursery. Some of these obtained a certificate from the National Chrysanthemum Society, as well as from the Royal Horticultural Society. They represent the pick of a great number of new kinds shown at the two meetings.

CARNATIONS.—*May Godfrey* (white) and *Reginald Godfrey* (salmon), recently noted by me as first-rate new varieties, were awarded first-class certificates this week. They are certain to take rank with the best of the winter-flowering Carnations grown largely by florists for market. They were raised and are being sent out by Mr. J. W. Godfrey, nurseryman, Exmouth, the well-known raiser and grower of new Chrysanthemums.

London.

W. Watson.

Plant Notes.

QUERCUS COCCINEA.—The Scarlet Oak is one of the first trees which come into our minds when any allusion is made to the autumn colors of our woods. It is a tree of the first size and handsome at all seasons, with abundant shining leaves in summer and clean limbs in winter, but in the autumn its leaves turn to a glowing scarlet and hold their brilliancy longer than any other one of the Black Oaks, all of which turn to some bright shade of red. It cannot be too often stated that among trees valuable for planting in parks, or streets, or private grounds, none are so strangely neglected as our native Oaks. They grow with as little difficulty and quite as rapidly as the trees commonly planted, and there are none which can be used with less fear of disappointment.

VIBURNUM DILATATUM.—This is one of the most recent of the Asiatic Viburnums introduced into cultivation here, although it is very common in Japan and central China. Seeds of it were sent to this country in 1880 by the Agricultural College at Sapporo, and the plants raised from these bloomed for the first time in the Arnold Arboretum in 1888. Since that time it has proved its perfect hardiness, and every year gives new testimony to its value as an ornamental plant in autumn, when its copious clusters of berries, bright red, sometimes tinged with orange, make it a very conspicuous object. Like most other Japanese plants, it retains its leaves late in autumn, and they have turned this season to a bright yellow color, although usually when frost comes earlier the colors are more dull. *Viburnum*

dilatatum is a spreading shrub, some eight or ten feet high, resembling our common *V. dentatum* in habit. As a flowering plant it has but ordinary merit, although about the middle of June it puts forth liberally small flowers, which quickly fall. Its prime merit is its fruit, which makes it at this season one of the most showy of shrubs.

ROSE MRS. J. PIERPONT MORGAN.—This is a sport from *Madame Cusin*, which originated with Mr. John N. May, of Summit, New Jersey. Like its parent, the flower is of most charming form, and is at its best before it has fully opened. In color it is of the fashionable shade known as cerise. It is not quite a self, but shaded light at the base of the petals; still its general appearance is rich and bright, and it is especially effective under artificial light. As seen at Mr. May's, the plants are strong-growing, with good foliage and prolific of fine flowers on long stems. The flowers, while of fine substance and color, have the added merit of lasting for an unusually long time, the petals adhering so firmly that some flowers, now before us, which were cut five days since, cannot yet be shaken apart.

IRIS STYLOSA.—Encouraged by the genial temperature, this *Iris* commenced to flower last week in the open. This Algerian species heralds a new floral season for this genus, for, excepting an occasional or desultory flower, the garden has been bare of *Irises* since early August. In its native country it is said to flower usually in December, and here it is properly a cool-house plant. Thus protected, well-grown plants, root-bound in pots, will flower freely. It is hardy here in a sheltered corner, at least, and it is well to plant out spare roots, for the chance of flowers, when weather conditions permit. The flowers are purples of various shades, and there is also a white variety. They are stemless, but furnished with such a long tube between ovary and petals that they are borne well up among, or even above, the leaves. This is one of the *Irises* with narrow grass-like foliage and thin, narrow, creeping rhizomes.

CORYDALIS LUTEA.—The bright yellow flowers of this plant are still opening in early November, and very cheerful they look now that so many of their companions have been blackened by the frost. But, besides its special value as a late-flowering plant, this *Corydalis* has the almost unique habit of continuous bloom from May until hard freezing weather. The plant, which is a native of the rocky parts of southern Europe, is naturalized in many other countries, although it is not often seen here. As grown here it is a true perennial, and becomes in time a low cushion, two feet across, of pale green twice-divided leaves. The flowers are borne in short racemes, are held above the foliage on slender stems, and the whole appearance of the plant at once suggests its relationship to the *Dicentra*. It is one of the best of plants for the rock-garden, and it will thrive in an exposed situation and sterile land as well as in the richest garden soil. It can be increased from seed or by division, and when once established it will go on flowering indefinitely. It is much more attractive than the more common *Purple Fumitory*, *C. bulbosa*. Our native *C. aurea* is a neglected biennial which flowers from early spring until midsummer, but it needs a rich well-drained soil and full sunlight to be at its best.

Cultural Department.

Work in the Greenhouse.

BY this time everything about the greenhouses should be made snug, for in this section we may expect a snow storm any day, and all loose glass, leaky hot-water pipes and other repairs must be attended to without delay. One of the commonest errors of construction is to use an insufficient quantity of piping to supply the heat in coldest weather without pushing the apparatus to do more than should be required of it. Much fuel is thus wasted, not to speak of risks of injury to boilers, grate-bars and piping. Every glass structure should have a series of pipes to hold in reserve for zero weather, and to be put to regular use on these occasions alone, though they



Fig. 71.—View in Mr. Hunnewell's Pinetum, at Wellesley, Massachusetts.—See page 451.

ought to be tested for air at times, especially when the heat is turned on after a period of disuse. Where the boiler-power itself is inadequate in severe weather, the question of an auxiliary heater is worthy of consideration. We have a large tubular boiler that will do all the work in almost all weather, but it is too large in mild autumn and late spring, and often gives much more heat than is required at these times, so that a smaller heater was put in to help the larger one out in very cold weather and do all the work in very mild weather. The economy of this plan has been made evident both in coal bills and wear and tear of apparatus.

Most gardens have a quantity of cold frames for storing plants of various kinds in winter, but more especially Violets, and I have often wondered why more of these frames are not made frost-proof by the addition of a row or two of pipes, either for steam or hot water. The replacing of straw mats alone with us costs each year as much as would pay for the coal to produce the needed heat, to say nothing of the labor required to cover and uncover the frames. Besides this, there are periods when the frames must be kept closed, and then the snow must be shoveled away before sun and air can be let in again. Seasons past have proved beyond doubt that cold frames are not frost-proof in this section; no matter how well they are lined and protected by mat coverings, there is sure to be a time when the frost will get inside, and all who have grown Violets know that a freezing will stop the production of flowers and aid the destruction caused by damping, when a little fire heat would save all this trouble.

Many plants, it is true, are not injured, but benefited by a little frost when at rest, such as the tender annuals, biennials and perennials, and these, of course, could be placed in an unheated frame, but plants that are expected to produce flowers in midwinter need a little heat in winter in this section, and in spring, when emptied for hot-beds, not half the fermenting materials would be needed, and the winter salads or early spring vegetables could be grown with ease and comfort.

A heated frame of this description should have posts sunk below the frost-line and spruce-planks used for the sides and ends, with ordinary three-by-six-foot garden-sash for the roof, these resting on three-by-four-inch rafters eight feet long. The two feet above the sash should be covered with a hinged wooden ventilator, and made in convenient lengths, this giving two feet inside for a pathway along the back. The best location for a frame of this sort would be at the east or south side of a heated greenhouse, utilizing the wall for the back of the frame, and the heat could be introduced at one end and return at the other through the pipes in the greenhouse, in this way securing two flow pipes, instead of a flow and return. The pipes should be placed at the front of the frame, so that the heat may strike the glass and ascend.

The greater part of the work in a house of this sort could be done from the outside by lifting off the sashes in mild weather, and at other times from the walk along the back, by entering through a door at one end. A house of this description has many uses, both in winter and in spring, and is equally valuable in summer, but where Violets are an essential all through the winter, which is generally the case, it becomes a vital question oftentimes how to meet the demand in the midwinter months.

Boston, Mass.

Plantsman.

Plants under Glass.

THE inactivity among greenhouse plants, which is very plainly seen during the dull period which follows the Chrysanthemum season and continues until the new year, ought to be encouraged by every cultivator. Less moisture is needed in the houses then than at any other time, and temperatures must be kept down to the winter level, especially at night. It is not only a waste of fuel, but a waste of the energy of the plants, to excite them into growth. When such premature movement occurs plants will start late in the spring instead of making a vigorous growth after the resting season. Many plants in the warmer houses are evergreen, and show no appearance of being at rest even in the depth of winter, but they are, nevertheless, inactive, and they must be treated accordingly, and not urged into growth.

Climbing plants of all kinds are now resting, and for the most part may be cut back, so as to let in all the light on the other plants, for while shade is desirable in summer, it is detrimental to the last degree in winter. Before cutting plants back it is well to keep them dry for a week or two, when there will be less bleeding or loss of sap, and the cuts will heal over more quickly. Dipladenias, Allamandas, Bougainvilleas, and all plants that flower from the wood made the same season, may be cut back hard, so as to encourage a strong start next

year, from as near the base as possible, but Stephanotis, Inga pulcherrima, tender Jasmines, climbing Roses, and plants that flower on the growth made the preceding season, must have only the weak shoots thinned out, so as to give the stronger shoots a chance to ripen and bloom well next year.

The hybrid Amaryllis, or Hippeastrums, as they are now called, are now without foliage, and should be kept dry for about three months, or until they begin to grow again. Most of the roots are lost each season during rest, but if a strong growth has been made in summer the flower-buds will be matured in the bulb and ready to develop as soon as the plants are repotted and the roots are formed. There is a great future for these splendid flowering bulbs when they are better known. Very little heat is required to grow them if they are started as late in the spring as possible and put into frames to mature after flowering time in summer.

Achimenes have become indispensable to us, and contribute no small part to the summer display. There is sometimes difficulty in wintering the bulbs. We shake them out of the soil they are grown in and place them in dry sand in a warm part of the potting-shed, and have had no trouble with them. Care must be taken that they do not start to grow prematurely in spring before they are placed in soil, or the young shoots will get a severe check at starting-time. All the ornamental-leaved Caladiums should be treated in the same way as soon as the leaves dry off, for if they are left in the pots they grew in during the summer they are very liable to decay at the base of the bulbs; and if the soil becomes damp where they are stored in winter, decay also follows. It is, besides, a great saving of storage-room if bulbs are shaken out in this way, and this is an important consideration in many instances. If there is decay in any of the bulbs the diseased part must be cut away and the sound parts washed, dried and a handful of powdered charcoal placed under the bulb when it is put into sand.

Gloxinias and Begonias are best wintered in the pots in which they grew in summer, if room can be found to store them, but, failing this, they may be placed in sand in flats. A temperature of fifty degrees will be found a safe minimum, or ten degrees lower than Caladiums can safely endure, as these are most sensitive to cold both when growing and at rest.

So many Chrysanthemums are now considered indispensable even to private gardens that it has become a problem how to store the stock-plants after they have bloomed, so as to get strong cuttings in spring. Those wintered in the greenhouse are apt to become weak and drawn. For several years after cutting down the plants we have placed the roots in cold frames, arranged together, each sort being carefully labeled. They are covered with mats in cold weather; the roots are sometimes frozen for weeks at a time, but this never hurts them, and a strong start is obtained in spring. We sometimes have to top the plants and take the second crop of cuttings in May for large blooms grown on a single stem.

Japan Anemones and Lilies that are grown in pots for decorative purposes should now be placed in a cellar for winter. If a little frost reaches them it is all the better for these plants, as it will prevent a too early start in spring, and when the weather is warm enough in spring they can be placed directly out-of-doors. The bushes of Lavender, Tritomas and plants of doubtful hardiness are heeled in in sand in the same cellar, but Hydrangeas must be placed where no frost will reach them, or the flower-buds are liable to be killed. Canterbury-bells, Hollyhocks, Pansies, Primroses and Foxgloves, all of which are doubtfully hardy here, must be stored in a cold frame, or, at least, part of them, so that there may be no chance of failure. If the Japan Lilies have not already been repotted this fall, it is high time they were seen to, as they root freely in fall after the old flower-stems have died down, and will continue to make roots all winter if potted now.

South Lancaster, Mass.

E. O. Orpet.

Bordeaux Mixture and the Potassium ferrocyanide Test.

SO many complaints regarding a rather unusual blemish of apples and pears have been received this year, that it seems important to find the real causes of the trouble. The fruit in both sprayed and unsprayed orchards has been affected, but the most serious injury has undoubtedly been suffered where the trees have been treated. In the case of a Pear orchard belonging to S. W. McCullum, of Lockport, New York, fully seventy-five per cent. of the crop was practically ruined. This orchard was treated early in the season, soon after the fruit had set, and in a few days almost the entire crop was upon the ground. The small pears appeared as if they

had been attacked in several places by a fungus, causing small circular dark brown or black spots, varying from a sixteenth to an eighth of an inch in diameter. The fruit-stems and the foliage were affected in the same way. This orchard had been treated with the Bordeaux mixture made with the ferrocyanide test. That the treatment was responsible for the loss can scarcely be doubted, for in an unsprayed orchard containing the same varieties, and separated from the above only by a fence, no such trouble was experienced. Fruit similarly affected was received from other sprayed orchards, and there can be no question that most of the trouble, if not all of it, was caused by the Bordeaux mixture.

Apples have also been injured by application of this fungicide, but I do not know of a case in which the consequences have been so serious as those just mentioned. The fruit, King and Baldwin, in the orchard that is being treated by this station, showed some unfavorable results of the treatment. Notes taken June 29th show that the fruit was then injured by the applications. The mixture which had been applied, with the exception of the last treatment, made June 16th, consisted of six pounds copper sulphate, four pounds quick-lime and forty gallons of water. On June 16th the ferrocyanide test was used in making the Bordeaux mixture, but it was applied to only a few trees. At the time the notes were taken these trees showed more injury than the others, but the use of the test can by no means be held responsible for all the injury. In a neighboring orchard, containing Baldwin and Rhode Island Greening apples, the fruit was also rusty, although the above formula had been used. I have been informed of a still more marked case in which the mixture, when prepared according to the formula, caused rusty apples. The owner of the orchard was treating a few trees, and some were left untreated. In throwing the fungicide, some of it went upon a tree which was to have remained untreated. Only a small portion of the tree received the mixture, but the owner is positive that on this portion could be found all the rusty apples.

But, has all the rusty fruit produced this season been due to spraying? In the orchards of L. T. Youmans, Walworth, New York, badly rusted Baldwin apples could be found, and the trees had not been sprayed. Similar cases have come to my knowledge, and there seems to be no question that some unknown causes may have assisted in bringing about this condition of the fruit.

A microscopic examination of rusted and healthy portions of Baldwin apples shows that the epidermis of the fruit had been lost and that the cell-walls beneath, for some distance, had thickened and presented a brown, corky appearance. This change in the cellular structure of an apple appears to be a healing process, and probably takes place whenever, after some irritation, there is time enough for the change to take place before some form of decay sets in. The greater the irritation or injury, the deeper may be this corky formation. In most of the rusty apples produced this year only from four to eight rows of cells seemed to be affected in well-marked cases, but this was sufficient to give the characteristic rusty color to the fruit, although the shape of the apples was hardly changed.

The causes which have brought about this peculiar condition can only be surmised. The season produced some of it, and as much rain fell early in the year, this may have been one of the exciting causes. In what manner this was brought about still remains to be shown. But the important point is that the Bordeaux mixture, however prepared, increased the evil. This is our best fungicide, and if it can no longer be regarded as safe, the fungus fighters may find it advisable to make a new start in search of a remedy. From the fact that the most severe cases of rusting are in orchards in which the ferrocyanide potassium test has been employed in the manufacture of the Bordeaux mixture, in order to use less lime, I feel quite certain that by the addition of more lime than this test calls for the trouble may be lessened.

It has yet to be shown what is the best method of making this mixture, for, as regards the proportions of the ingredients, the work is still far from being finished. In the mean while I believe that the formula which has, on the whole, proved most satisfactory in this country is the use of six pounds of copper sulphate, four pounds of good quick-lime, and from forty to fifty gallons of water.

Cornell University.

E. G. Lodeman.

Mushrooms.

THE popular idea that Mushrooms are very difficult of cultivation restrains many persons from making any attempt to grow them; but, as a matter of fact, few vegetables can be had so easily during the winter months. In some establish-

ments regular houses are constructed for them, but this is not indispensable, as they may be grown quite as well in any cellar, shed or other place that can be kept dark and is close enough to prevent the heat from escaping too readily. Fresh droppings from the stable should be taken every day and thrown on the floor of the place where the bed is to be made. This should be turned frequently until enough has been procured for the bed. There is no need of mixing soil with the manure, as the crop will do equally well without it. The first bed should be made on the floor the whole length of the apartment, about three feet wide at the bottom and rounded at the top, with sufficient space for passing between the bed and the wall. Build up the bed in thin layers, tramping each one firmly until the whole is two feet thick. The firmer the bed is made, the less will be the tendency to heat too violently. A thermometer plunged into it will probably rise in a day or two to over one hundred degrees, but will soon begin to decline, and when it sinks to about ninety degrees the spawn should be introduced. Begin about eight inches from the bottom and make holes some four inches deep and from ten inches to twelve inches apart all over the surface of the bed, and into these place and cover up pieces of spawn about the size of a hen's egg. The bed must be left for about ten days in this way and then covered over with about two inches of fresh loam, which should be fairly moist, but not too wet, and beaten firmly with the back of a spade. The whole should then have a covering of hay or straw three inches thick at first, but if the heat is likely to fall below sixty degrees the covering should be increased.

When the first bed is completed, begin gathering manure for the next in the same manner and place as for the first, and the heat arising from the fresh manure will keep the atmosphere of the house sufficiently warm for the crop already under way.

Where there is room for four beds on the floor a constant supply can be kept up. Beds on the floor are preferable to those on shelves, as they are much easier made and there is less tendency to dry out. Watering, which is always attended with more or less danger while the crop is growing, is thus avoided. After the crop has been gathered the bed should be thoroughly wet with tepid water and a little fresh soil applied and again covered up with hay. A second crop can be gathered four or five weeks later.

Tarrytown, N. Y.

William Scott.

Correspondence.

Planting Seeds of Cedar of Lebanon.

To the Editor of GARDEN AND FOREST:

Sir,—I have just received a cone of a Cedar of Lebanon which has recently been cut down on the grounds of a friend in England. As this is the only cone which has been preserved, I should like to plant some of the seed, but do not know how to go about the work. This particular tree grew on a heavy clayey soil, whereas the soil of Connecticut, where the seed is to be planted, is rather gravelly. Will this make any difference in its chance of life?

Greenfield Hill, Conn.

B.

[The cones of the Cedar of Lebanon are not fully matured until the second, or, according to some authorities, not until the third year after flowering, so that if the cone which our correspondent possesses is not fully grown the unripe seeds will probably fail to germinate. If the cones are mature, the seeds will keep fresh in them for a number of years, and grow when taken out and planted. The cones of the Cedar of Lebanon are very hard, the thin broad scales being very closely imbricated or packed, and held together by an abundance of resin. A little patience is required in extracting the large, somewhat triangular, seeds, two of which are usually borne at the base of each scale. Generally, no perfect seeds are produced near the apex or the lower portion of the cone. A simple method of getting at the seeds would be to saw off both ends of the cone, then split it by driving a wedge or spike through its axis, afterward separating the scales and extracting the seeds, working from the base toward the apex, of course. The seeds should be planted in a pot or box of good soil composed of sand and loam, well drained beneath. Place the seeds so that they do not touch each other, and cover lightly with soil—a covering of once or twice as thick as the diameter of the seed being sufficient. There is usually

more danger from too deep than from too shallow planting. While the soil should be moist, it should not be wet. The surface soil, however, should never be allowed to become thoroughly dry, and a slight shading will help to prevent this. The temperature should not be allowed to fall below fifty degrees, Fahrenheit, for any length of time. As soon as the little plantlets appear they should have plenty of air and light, and having attained an inch or more in height they may be transplanted to other boxes or the open ground, where they will have more room than in the seed-box. The Cedar of Lebanon cannot be expected to thrive in the northern United States, although it may live in some peculiar localities. Any good soil is suitable for it, provided there is good natural or artificial drainage. —Ed.]

November Flowers in Vermont.

To the Editor of GARDEN AND FOREST :

Sir,—It is seldom that the first of November comes here in northern Vermont with as little frost preceding it as has occurred this year. In the most sheltered places plants were not injured. *Milla biflora*, which is a late bloomer here, was at its best. *Calochortus Bonplandianus* was also in flower. *Viola pedata* and its variety *bicolor* were both full of bloom. This is one of the best wild Violets in cultivation. It grows, as a rule, on very poor land, but when it is placed in rich garden soil responds very quickly to cultivation. Among other Violets which were in flower were *V. Wilsoni*, *V. alpestris*, *V. primulæfolia* and *V. cucullata*. *Campanula rotundifolia* was full of flowers. *Primula cortusoides*, which had had several seasons of bloom, seemed to be as full as at any time. The little *Linaria alpina*, from seed sown in May, was at its best. This is a very attractive little plant, not difficult to grow, and, so far as I can judge, is not inclined to spread here as some others of the genus do. Its flowers, which are in a sort of a raceme, are violet-blue and yellow, with spurs about the length of the corolla. It is a native of the Alps, and makes a fine species for the rockery.

Kniphofia Rooperi is one of the last of this genus to flower, and made a better showing at this than at any time before. *Gaillardia grandiflora* still afforded a few flowers, though by no means as good as the earlier ones. *Callirhoe involucrata*, var. *linariæloba*, displayed a better bloom than I have seen on it this year. The little English Daisy, *Bellis perennis*, grown from seed sown in May, made a better showing of flowers than any other plant except the Pansies, and had been constantly in flower for more than six weeks.

Lepachis columnaris, var. *pulcherrima*, is a late bloomer in this climate, and our autumn frosts find it in full flower; and besides those mentioned above I counted twenty-seven different plants which were showing many flowers, some of them, like the neat little Sea Pink, *Armeria montana*, having been in continuous bloom since early summer. All of which goes to show that a northern garden is not necessarily a dreary place after mid-autumn.

Charlotte, Vt.

F. H. H.

November in a New Jersey Garden.

To the Editor of GARDEN AND FOREST :

Sir,—Many plants, like *Heliotrope*, *Scarlet Sage*, *Mignonette*, *Nasturtiums* and *Tea Roses*, are still flowering here profusely in the open air, and our lawns now are greener and our gardens are more attractive than they were at any time during the parching drought of summer. Hardier flowers, like *Cosmos*, *Chrysanthemums* and *Dahlias*, were never more beautiful, and perennial *Phloxes* and perennial *Peas* are both in abundant flower. Among our shrubby plants the little half-trailing *Abelia rupestris* is, perhaps, the most beautiful just now, as it is covered with its fragrant pink trumpets in miniature, and its glossy foliage will remain all winter. Some long branches of the Japanese *Honeysuckle* are showing many flowers, which are made more beautiful as they hang beside other stems thickly set with black shining fruit. This is a most aggressive plant, and it is almost impossible to keep it within bounds here. It is more unmanageable even than our native *Trumpet Creeper*, which will send up strong shoots from underground stems many yards from the parent plant. This habit of the *Tecoma*, *Stag-horn Sumach* and some other plants makes us cautious about using them.

The golden flowers of the *Witch Hazel* are now strung along the bare twigs, but the leaves still remain on many shrubs, and

the glowing scarlet of *Spiræa prunifolia* now makes it beautiful in spite of its whippy habit. The rich brown of *S. Van Houttei*, the bronze of the *Forsythia* and the indescribable brilliancy of some of the *Barberries*, especially of *B. Thunbergii*, makes the shrubbery quite as beautiful as it ever is when covered with flowers. The black fruit of *Ilex glabra* appears to the best advantage as it is set amid its shining evergreen leaves, and the gray, aromatic, waxy fruits of the *Bayberry* are crowded along the twigs, where they will remain all winter with the fragrant leaves. The red and black fruits of *Pyrus arbutifolia* and *P. nigra* still cling to the shrubs, as do their crimson leaves, and the fruit of *Ilex lævigata*, which was red in September, fully a month before that of *I. verticillata* turns, is still abundant. It is said that the berries of our native *Holly* are not as bright as those of the European tree. But the fruit of our own trees differ in the intensity of their coloring, and some of them bear berries which cannot be surpassed for brilliancy. The Cedars are full of their gray cones, and these Cedar sprays when mingled with the berried twigs of the *Holly* are singularly beautiful. The *Hollies* have not been so full of fruit for years as they are to-day, owing to the fact, perhaps, that the rose-bug did not ravage their blossoms this year as usual. *Akebia quinata* is as green as it has been all summer, and *Rosa Wichuriana*, which I received two years ago, has sent stems over a wire netting for a distance of twelve feet, and still carries green leaves with the small shining hips scattered along their last year's growth. Altogether, it is not desolation which November brings to our gardens in southern New Jersey; it rather crowns and completes the year with a rich and ripened beauty.

Vineland, N. J.

Mary Treat.

Exhibitions.

Chrysanthemums at Philadelphia.

THE autumn exhibition of the Pennsylvania Horticultural Society was held last week in Philadelphia in the Academy of Music. Beginning with the roomy lobby, where some of the largest and best plants were disposed, the spacious halls and adjoining rooms were crowded with exhibits. The large floor-space afforded by the stage and by flooring over the parquette was all needed for *Chrysanthemum* plants, vases of *Chrysanthemums* and *Roses*, and for decorative plants on exhibition. The show was the largest in the number and variety of exhibits and the most elaborate in arrangement and decoration of any ever held in this city, and the great space seemed strangely small on account of the generous display in all directions. Coniferous trees, evergreen plants and branches of autumn leaves made the background for exhibition plants which encircled this main hall. Groups of choice decorative plants, scattered among the bright-colored *Chrysanthemums*, presented a more pleasing effect than is usually seen at a flower-show, where the exhibits are too often set in severe lines.

Specimen plants have heretofore been the leading feature in the *Chrysanthemum* exhibitions of this society, but those shown last week, while of large size, well grown and creditable, lacked the artistic finish which the handiwork of James Verner has taught the visitors to Philadelphia flower-shows to expect. Some of the prize plants measured as much as the phenomenal specimens shown several years ago by George W. Childs, A. J. Drexel, E. W. Clark and R. S. Mason, but the flowers were less notable in size, form and color. For the best ten plants, ten varieties, Gordon Smirl, gardener to Joseph F. Sinnott, took first premium. In this collection, Mrs. Robert Craig was the best white, and a good plant of Gettysburg, a red of the George W. Childs type, was one of the very brightest plants in the entire show. Ostrich Plume, another plant of this group, was a feathery light pink, introduced by Peter Henderson & Co. two years ago. Good Gracious, President Harrison, Minnie Wanamaker, Ada Le Roy, Frank Thomson, Vivian Morel and Colonel W. B. Smith were other varieties in the ten. Emil Lieker received second premium in the same class. A plant of Hicks Arnold was the best in this set, with *Cullingfordii*, Lillian B. Bird, Colonel William B. Smith, Mrs. A. J. Drexel, Mrs. Irving Clark, W. H. Lincoln, Louis Boehmer in a good shade of pink, and Ruth as the best white flowering plant. In the display of twenty-five varieties, one bloom to each plant, the best were Mrs. Craig Lippincott, Mrs. F. Thomson, E. Dailedouze and Mrs. Bertha Robinson, a large flower of coarse habit, the broad incurved petals crimson within and pink on the outer side. C. W. Cox, gardener to Clark Kemble, received first premium for this exhibit.

The best six specimens of different varieties in ten-inch pots

included what seems an important novelty in a plant of Mrs. Leslie Ward, similar to Hicks Arnold, but a deeper orange. For the best seedling plant, William Boyce, gardener to Charles Hibbard, was awarded first premium. The flower is large, white, tinted with pink, the petals whorled. The best specimen plant of white was a plant of Puritan; the best yellow flowering plant, W. H. Lincoln, and the best specimen plant of any other color, Hicks Arnold. The prize for the best three plants, three varieties, introduced to commerce during 1894, was given to Mary Bell, a showy crimson flower, the outer side of the petals a lighter shade of the same tone; it is of compact form, but lacks depth. Yellow Queen, second in this collection, is a light yellow, of medium size, with longer outer petals; and Major Bonnafon, more incurved than Yellow Queen and deeper in color, was the third.

The sensation of this year's show was the new white Chrysanthemum, Philadelphia, grown by Hugh Graham, and a seedling of Marguerite Graham, said to be crossed with Mrs. Craige Lippincott. The color under artificial light is pure white, but in sunlight it shows a faint lemon tint; the petals are incurved, in some flowers twisted regularly around the flower at the middle, and enclosing the stem for a considerable distance, so that the form is completely globular. The petals are ribbed and the flower has good substance. Philadelphia received a silver medal, the Blanc prize for best seedling and first prize for vase of fifty blooms, and it has already taken prizes in many other cities. A large white unnamed seedling of good form, exhibited by T. H. Spaulding, Orange, New Jersey, was awarded a silver medal. Silver Cloud was another new seedling, a flower of large size and good depth, flesh-white in color. Mrs. Charles F. Berwind was one of the most distinct new seedlings, incurved, red inside and pink outside. It is noteworthy that Katherine Leech and Annie Monahan, which were prize flowers of last year, were only occasionally seen, and such promising varieties of 1893 as Dr. Herbert M. Howe and Mrs. W. A. Reed were not shown at all, and there was not one specimen plant of such a standard variety as Kioto. Some beautiful flowers of the clear yellow Eldorado were shown by Thomas Monahan. Esmeralda was one of the best among the deep pink flowers, and Harry Balsley was the best light pink. Edward Hatch, Dorothy Toler and Vivian Morel were the other best pinks. Minerva was one of the very best pale yellows, and Eugene Dailedouze was always one of the best flowers in every collection in which it appeared. Golden Wedding, Mrs. Craige Lippincott and Major Bonnafon were also frequently seen in admirable form. The exhibition was particularly rich in white flowers, and most of the prize seedlings were of this color. The drift of public taste may be seen in the fact that there were no Pompons on exhibition, and no Anemone-flowered varieties, although prizes were offered for both these classes.

It ought to be added that the prime value of the show lay in the affluence of its display and in the high average excellence of the individual flowers. Cut flowers of the very first quality were shown by the thousand, many of them not being entered for competition, but from what seemed a general desire to make the display rich and impressive. Of course, the Chrysanthemums overshadowed the other features of the exhibition, although there were Roses enough to make a fair show in themselves, with choice Orchids from Pitcher & Manda and Edwin Lonsdale, and great stretches of Carnations, the most noteworthy being the new seedlings shown by John May, and Della Fox, a variety raised by Myers & Samtman.

Chrysanthemums at Boston.

THE Chrysanthemum Show of the Massachusetts Horticultural Society, last week, was generally pronounced better in arrangement, and, therefore, more effective as a spectacle, than any ever held in Boston. This arrangement was simple, the cut flowers being confined to the lower hall, where there was nothing else but Chrysanthemums, while the specimen plants were grouped in the centre of the upper hall. The large Chinese vases standing on the floor, and filled with cut flowers with long stems, were very taking; admirable, too, in their way, were the plain brown earthenware cylindrical jars used as receptacles by the Waban Nursery Company. The cut flowers seemed to be more uniformly large and regular than ever before, and when massed in vases they certainly produce striking decorative effects, however ugly and unnatural the tall, single-flowered plants are individually.

The cut flowers exhibited by E. M. Wood & Company were uniformly admirable, and certainly no better collection has ever been made by one exhibitor. The six prize vases with

ten blooms each showed flowers of E. Dailedouze, Mrs. Jerome Jones, Vivian Morel, H. Balsley, Golden Wedding and Mrs. Phipps. A vase of ten flowers of Inter-ocean, one of the best of this year's novelties, won another prize for E. M. Wood & Company. This flower is a soft pearly pink, and it may generally be described as a light-colored Vivian Morel. Other good introductions of the year, which seem to be genuine advances on the older varieties, are, in yellow, Major Bonnafon and Eugene Dailedouze; and in white, Mrs. J. G. Iis and Mutual Friend. James Brydon, gardener of Hon. John Simpkins, once more gave evidence of his skill by exhibiting a superb vase of fifty long-stemmed blooms in splendid form. His vase of six Japanese incurved blooms and one of Eugene Dailedouze were also admirable, and so were his prize blooms in the class for twenty-five distinct varieties. A new exhibitor, Mr. W. Slack, of Stamford, Connecticut, won the second prize in this competition with an admirable lot.

For twelve specimen plants the prize went for the fifth time in succession to Walter Hunnewell, Esq., T. D. Hatfield, gardener. Perhaps Mr. Hatfield has grown larger plants in some former years, but he never showed a lot so uniform in size and finish as these remarkable specimens. The best of the twelve seemed to be Arethusa, a bright rose; W. H. Lincoln, the well-known yellow; G. W. Childs, crimson, and Portia, a pale pink, which many visitors considered the handsomest plant in the hall. The second prize went to N. T. Kidder, Esq., for another admirable lot of plants grown by Mr. William Martin, his gardener. Groups for effect were unusually good, the three prizes being awarded in order to the Bussey Institute, John L. Gardner and W. H. Elliott. The plants in the last collection were admirably grown for commercial use, and each plant was perfect, but the group failed in effect on account of the absence of other plants to blend with the Chrysanthemums. The Bussey Institute group, arranged by Mr. C. J. Dawson, was unusually attractive.

Flowers of the Louis Boehmer type seemed unusually abundant, and to a certain extent they were a blemish on the exhibition. The colors are usually indefinite and weak, the flowers are neither good in form nor substance, and they almost always show the centre in a disagreeable way.

A Flower-show in New York.

THE music-room of the Eden Musée provides a good setting for a flower-show, where fine individual exhibits, rather than great masses of flowers, are to be viewed. Messrs. Siebrecht & Wadley, the well-known florists, have arranged an exhibit in this hall, to continue ten days, and, in addition to their own rich collection of plants and flowers, have drawn on the treasures of a number of private gardens. I found on my visit during the first day of the show that the side walls, which are fully mirrored, had been draped with luxuriant vines of Wild Smilax, and at the base of these were arranged tables containing handsome specimens of Ferns and other foliage-plants, among which were distributed exhibits of Orchids, Chrysanthemums and seasonable flowers. Masking the front of the stage was a well-arranged bank of Ferns, Orchids, Anthuriums, etc., which was a most attractive feature. The beautiful golden-yellow *Oncidium varicosum* Rogersii, with its graceful sprays, was employed here with great effect. The finest individual plant of this variety was from the garden of Mr. G. Amsinck. Noticeable plants in the collection were *Lælia autumnalis alba*, and a large, deeply colored form of *Vanda cœrulea*, for which there does not seem to be a varietal name. A finely flowered specimen of the usual form came from the garden of Mrs. Frederick Goodridge. Distributed over the floor-space were many specimen Tree Ferns and Palms, about the bases of which were congregated masses of Chrysanthemums, grown in differing styles. There were standard plants, well flowered, from Mr. W. E. Dodge, the new pink *Erminelda* being especially noticeable for fine colors. Mr. G. Amsinck sent seventy specimens grown to single stems in six-inch pots, not of the largest size, but well grown. Two masses of naturally grown plants from Mrs. E. R. Laidew, Glen Gove, New York, were very pleasing in contrast to the usual formality. There were also good standards and naturally grown plants from Mr. J. Hood Wright. The best specimen blooms were shown by Mr. J. J. McComb, of Dobb's Ferry, some new varieties of large size and very creditable. Yellow Queen, Lillian Russell, Golden Gate, Excellent and Vivian Morel were the best.

Mr. Ernst Asmus exhibited well-finished flowers in large vases. Siebrecht & Wadley exhibited a new Chrysanthemum,

the Mrs. Frederick Goodridge, which is a seedling of the largest size, well rounded, with narrow, rather twisting petals, and pure white. It is especially valuable for its earliness, the flower having been in good condition to cut on October 2d. All the new varieties of the season were shown here, but it seems unnecessary to repeat names which are noted in detail in reports of the larger shows. Why cannot New York support a show of seasonable flowers every month of the year, in such a hall as the one in which this show is given?

Elizabeth, N. J.

J. N. Gerard.

Notes.

In their advance list of novelties for next year, Thorburn & Co., of this city, announce another Dwarf Lima Bean of the Kumerle strain. It seems probable that we shall soon have as many varieties of bush Limas as of bush Wax Beans, and for practical purposes they may soon supersede altogether the old climbing sorts.

A correspondent writes that he has a tree, purchased under the nursery name of the Hungarian Silver Linden, the entire under surface of whose leaves literally shines like silver. He wishes to know if seedlings from this tree will show the same whiteness of leaf which appears so striking in this individual tree. To which we reply that trees vary very much as to the glaucous or silvery color of their foliage, as persons well know who grow seedlings of *Picea pungens*. As to this particular Linden we can only say that seedlings from a magnificent specimen of what is probably the same Linden on the grounds of Mr. Thomas Meehan do not all show this silvery whiteness. In fact, Mr. Meehan thinks that, at least, half of them show very little of it.

Professor W. F. Massey, of the North Carolina Experiment Station, who has written several times to this journal in regard to the possibilities of the successful production in that state of bulbs in commercial quantities, has just issued an illustrated bulletin, in which he gives directions for the cultivation of *Amaryllis*, *Freesias*, *Galtonia candicans*, *Roman Hyacinths*, *Lilies*, *Narcissus*, *Tuberoses* and *Tulips*. It is stated that bulbs of a superior quality have been produced at the station farm near Raleigh, and this bulletin is intended to encourage the farmers of North Carolina to make a trial of the industry in a small way and familiarize themselves with the methods of treating and handling the crops. It is hoped that this may prove an industry in which the people of North Carolina can, in time, compete successfully with the growers in Holland, France and the Scilly Islands.

Judging from the reports in the Minnesota papers, the frauds in the sales of timber from the Pine lands of that state have been most disgraceful, and we may well credit the stories that some of the fires that have devastated the forests there were kindled by men who wished to burn up the proofs of their robbery. We read of state officials who have sold stumpage at \$2.00 a thousand, when it was worth at least \$4.00, and even at that rate more than twice as much timber was often cut as was reported. The people have at last become aroused, and in the proceedings instituted by the state several convictions have been made, and it looks as if further investigation and prosecution might return a large amount of money to the treasury of the state. Our wasteful methods of timber-cutting are bad enough when at their best, but the devastation would naturally be much more sweeping when the trees are cut by thieves who are anxious to obliterate the traces of their crimes.

In an address delivered by James W. Bentley, the Secretary of the National Tulip Society of England, it is said that before this flower was introduced into western Europe in 1550 the Turks had already many varieties of Tulips, as seems to be proved by an extract from Hackluyt's *Voyages*. It was first planted in England in 1577, and Parkinson enumerated one hundred and fifty varieties as early as 1629. In 1665 a catalogue of one hundred and eighty-four varieties appeared in a work published by John Ray, and in a second edition of the work ten years later the list was increased to three hundred varieties. An amusing paper by Sir Richard Steele in the *Tatler* of 1710 ridicules some of the high-sounding names which florists gave their Tulips in that early day. But the names he laughs at, like Black Prince, Duke of Marlborough and Alexander the Great, are brief and modest compared to many of those with which the garden-flowers at the present time are burdened.

A late number of the *Pacific Rural Press* gives pictures of the flowers of two hybrid Clematises which Mr. Luther Burbank has produced. The first was originated by crossing the

pollen of the coral-colored flowers of *Clematis coccinea* upon the purple bell-shaped flowers of *C. crispa*. The result is a vigorous plant, which produces flowers continuously from June until autumn. Most of these are broadly bell-shaped, and from the picture they seem to be larger than those of *C. crispa* and have a beautiful frosted appearance. The color of the flower is not stated, but it is said to be a mingling of that of the two parents, but one can hardly conceive what color blue and scarlet would produce. The other one is the picture of a large double white flower, which is said to be a product of plants of the Jackmanni and Lanuginosa type. The flowers are of the largest size, very double, white, variegated with light blue, and their soft, feathery look, added to a rare symmetry of form, seems to make this a plant of great promise.

The new crop of many foreign and domestic nuts has been coming in during the last fortnight, and English walnuts, from Chili, are now succeeded by the Naples and California product, the first car-load of these California nuts having arrived last Friday, two weeks after the first arrival from Italy. The market season for Chili nuts begins here in early summer. The poor quality of these nuts last year forced down prices at the beginning of this season, when they brought only five and a half cents a pound. This year's crop has proved to be of really good quality, and those yet in stock now command seven cents. California walnuts are of good size and quality, but are bleached by a sulphur process which whitens the shell and makes them much more showy than the imported nuts. This bleaching is not encouraged by the best eastern dealers, who claim that it injures the meat of the nut, while it also increases expense. The cost of transportation and loss by shrinkage on nuts brought from California amounts to two cents a pound, and even nine cents is not a paying price to the eastern wholesale dealer. At this figure sales here are slow and preference is given to the Naples walnuts, which now sell for ten cents a pound. All European crops of these nuts are short this year. Grenoble walnuts, the highest grade of all, are due here within a week, and eleven and a half cents is being asked by local dealers for advance orders. The crop of the so-called French walnuts, a lower grade, also from France, is almost a failure. Much of the home crop of England is used there for pickling, and many more are imported to meet the demand for table use. A few English filberts are seen here every fall in the highest-class fruit-stores; two lots, amounting to nearly five hundred pounds, have been sold this month at the high price of thirty cents a pound by the importers, and as many more will probably constitute the entire receipts. These nuts are not kiln-dried, but come green in the husk. A small filbert from Barcelona formerly came to America in considerable quantities, but these now go to the English markets. The Sicily nut is the standard filbert here, and the sort known in the trade as the Long Naples is also a favorite; the latter now sell for nine and a half cents in their original packages, while those from Sicily are but six cents a pound. For twenty years the showy Spanish Taragonas have been the most popular almonds, but the Princess Paper-shell, from France, is rapidly regaining the place in popular favor which it held a quarter of a century ago. Of the French almonds the Languedoc is the best. California Paper-shell almonds are now bringing the highest wholesale prices of twelve cents a pound. The choicest of all shelled almonds, for confectioners' use, as for the table, are the Jordan almonds, from Spain. Their shell is smooth and very hard, but the meats are long and slender and altogether desirable. These now sell at retail for forty-five cents a pound, in pasteboard packages. Brazil nuts, or Cream nuts, are among the most plentiful this year, and the shipments which began in March are still continuing. These can now be bought in large lots as low as three and three-quarter cents a pound, but the holiday trade is likely to make better prices, as in other years, when a rise from five and a half to fifteen cents has taken place in a few weeks before Christmas. The so-called Paradise nut, or Sapucaia nut, also from South America, is more rare, and the first lot seen in many years was sent to this city last fall. They are more delicate than the Brazil nut, which they resemble somewhat in appearance. They are said to keep well for years. They command thirty cents a pound at wholesale. Among the rarer foreign nuts are Pistachios, which are imported directly by dealers in confectioners' supplies, and are used for coloring confectionery and ices, and the so-called Litchi or Lyche nut, which is really not a nut, but the fruit of a tree native in southern China—*Nephelium Litchi*. When dry it becomes nut-like, with a rough, but fragile, shell, and contains an aromatic pulp. This fruit is exclusively imported by Chinese merchants.

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Park Boards and their Professional Advisers.

ABOUT two months ago we called attention to the fact that the Park Board of New York had once more assumed to design certain of the city's public grounds entrusted to their care, or, rather, that they had begun to prepare these grounds without any design whatever, and without even asking the opinion of the professional adviser, who is employed and paid for just such work, and who is thoroughly competent for the position. The ground itself is only a small triangular area, one side of which is rather more than two hundred feet long, and its chief value lies in the fact that it helps to give some dignity of approach to an expensive new bridge which has just been built at that point across the Harlem River. Such a place, under the hand of a skillful artist, could certainly be made attractive and useful. At all events, the men who have it in charge owe it to the people of the city to see that no opportunity for enhancing the beauty of its possessions is thrown away. One would hardly think it possible that so simple and evident a rule of action as this could be set at defiance by public officials, and yet it is stated that the Park Department, without any consultation with its professional designer, has ordered a huge mass of rock, which is the most conspicuous feature in this little park, to be blasted down to the street-level and carted away. Just what should be done with this rock is a question which no one should answer without study, and the mere fact that no study has been given to the subject is sufficient to convict the Park Board of maladministration. The matter is not so serious a one as the case of the Harlem Driveway, simply because the latter is a much more important work, but the principle involved is precisely the same, and it is one in which the people of this city and of every city in the country ought to be profoundly interested. It involves the fundamental questions whether landscape-art ought really to take rank as a profession, and, if so, what should be the relations of the Park Board and the landscape-architect and the distinctive functions of each.

If landscape-gardening in its best development is one of the fine arts, it should certainly rank with other professions. Few will deny that the transformation of a series of rock-ledges into the succession of smiling landscape which unite to form the consistent picture now presented

by Central Park, is as truly the work of an artist as would be the painting of one of these landscapes on a bit of canvas. It plainly requires true creative faculty to recognize the controlling features of any landscape, and then to make a design which, by emphasizing this one and softening down another, will realize in a term of years the ideal beauty which the maker foresaw from the beginning with "the prophetic eye of taste." One of our city officials lately said that "the woods are full of landscape-architects." The fact is, that there are not half a dozen men on this continent who have sufficient constructive talent and breadth of training to undertake such work as the Park Board of this city have in charge, with any guarantee that it will be worthy of the city. Indeed, if we should search the world over it would be hard to find half a dozen men who are finished artists in actual landscape composition and skilled at the same time in the art of making the enjoyment of these landscapes available for the multitudes of a modern city. But this is just what a park maker of the first rank is called upon to do, and this is what has been done more than once by artists in our own country when they have had the support of intelligent commissioners.

Now, what should be the position of an artist with such a field of activity in relation to the park board which secures his services? Certainly his functions are not the same as those of a clerk or a typewriter, who simply transcribes the thought and executes the will of his employer. A lawyer has duties to his profession with which his client cannot interfere, and a physician makes prescriptions, not in accordance with the whims of his patient, but in accordance with the dictates of training and experience. An architect is entrusted with the design of a building, and within certain limits he is not interfered with, while in the expression of artistic principles his judgment is accepted as final. Certainly, the official adviser of a park board in matters of design is entitled to as much consideration as members of any of the professions we have alluded to. That an artist of judgment and experience is needed in solving the thousand questions which arise in preparing and caring for the open-air resorts of a great modern city is beyond question. He is appointed because his skill is recognized in matters of which the park commissioners have made no study, and for which they may be no more qualified than the majority of men ordinarily summoned on a coroner's jury are qualified to make an analysis of the contents of a dead man's stomach. In cases where technical skill is required they ought to listen with respect, at least, to professional judgment; and when Mr. Vaux, for example, makes a preliminary plan for a speedway with two sidewalks, instead of one, as the Commissioners ordered, this ought to lead them to suspect that their own scheme may be vicious, and that it probably ought to be abandoned.

There need be no apprehension that park commissioners will find nothing to do when their professional advisers are charged with the full responsibility of what is designed and done within their legitimate field. Questions of business policy and business method sufficiently complicated to require the deliberation of a body of very broad-minded men will always arise. It will often be necessary for commissioners to select from different plans which their own experts originate, or to decide between alternative designs. Such questions at issue should be brought before them, it is true, in distinct form as propositions which they can comprehend, and they must have the aid of experts to present these cases in oral or written reports or in the form of drawings or models; nevertheless, the ultimate decision of these large questions must rest with them. Many of their relations to a landscape-architect will be fundamentally the same with those of a committee in charge of a municipal building when dealing with its architect. The board must determine questions of financial policy; it must see, too, that individual features, as they are reached in detail, are consistent with the broad general design agreed upon, and, above all, it must see that the architect is

doing his work wisely and well. A park board will always have responsibilities weighty enough to call out all the tact and talent which wide business experience can furnish and all the discrimination which comes from cultivation of mind and refinement of taste. Indeed, the broader and more thorough the training of a commissioner, the more work he will find which is worthy of his powers, the more judicious he will be in selecting experts and the more carefully he will consider the judgment of these experts in strictly professional matters. And since the best artists are not infallible, fortunate is that city which has a commissioner who is competent to aid its landscape-gardener by his criticism and counsel.

Of course, in public works the landscape-architect has to consider his duties to the people as well as his relation to the park board. More than once in the history of Central Park the professional counsel of the board have felt it their duty to resign when their judgment has been overruled by commissioners who could not comprehend the value of expert advice. Every one who knows the history of Central Park knows that it has been saved from actual desolation, because the people have arisen at critical times to the support of these artists against the projects of the commissioners. Over and over again this park has been rescued from serious defacement and from destructive invasion of one sort or another in the same way, and for the courageous stand taken by these men who were loyal to their art, and, therefore, loyal to the highest interest of the people, the city owes a debt of gratitude that can never be canceled. Indeed, it can be demonstrated before any jury of reasonable men that the actual money value of the park to the city is more to-day by millions of dollars than it would have been had not park commissioners, time and again, been forced by one circumstance or another to accept against their will the counsel of their landscape-architects.

A VERY pleasant incident of the week was a reception and dinner at the Savoy Hotel in this city, at which Dean Hole was the guest of about fifty gentlemen, all of whom have some special interest in horticulture. The company included eminent jurists and journalists, physicians and men of business, representatives of various horticultural societies, nurserymen, seedsmen, florists, men representing the widest possible diversity of interest and activity, but all united in a desire to testify to their esteem of one who is known the world over for his unaffected love of nature, for his intelligent and sympathetic appreciation of garden-art, and for his contributions to the literature of the garden, especially for his charming book on *Roses*. There were roses everywhere throughout the dining and reception rooms, and marvels of Chrysanthemums; there was abounding good-fellowship to prove that there is a real bond of sympathy between all who have a genuine love for flowers and gardens; there were pleasant little speeches, and, above all, there was a response by the guest of the evening to an address of welcome by Mr. W. C. Barry, who had come nearly four hundred miles to preside at the table. Dean Hole's familiar talk was on the unfailing delight of gardening as a refreshment and restoration for body, mind and spirit, while his unaffected manner and quiet humor, revealing the simplicity, sincerity and wholesomeness of his nature, were singularly winning. In the course of his address, Dean Hole took occasion to speak of Central Park, Morningside Park and Riverside Drive as admirable examples of consistent work in landscape-art, and superior in their way to any similar constructions in Europe. He urged upon his hearers the duty of helping to establish a public sentiment which will tolerate no deviation in Central Park from its original aim to produce broad natural effects instead of breaking up the landscape and frittering it away with a multitude of details. He spoke strongly upon the necessity of protecting it from the intrusion of everything incongruous or out of harmony with its central and controlling motive.

The Possibilities of Flower-shows.

THE arrangement of flower-shows is always a difficult matter, for to reconcile the requirements of exhibitors with a general artistic effect seems almost impossible. Of late years several societies have taken steps in the right direction by offering prizes for plants arranged for decorative effect, and at the recent Chrysanthemum show in Boston the first prize awarded in this competition went to the exhibit which contained the fewest Chrysanthemums.

In this exhibit, made by the Bussey Institute, much of the charm was gained by the free use of Palms and Ferns interspersed with the brilliant blossoms, the green and graceful foliage helping, by its coolness and sweeping lines, to reconcile the sometimes clashing tints of the flowers and their tendency to stiffness. Moreover, the presence of simple varieties and unstaked specimens in this collection gave an air of freedom and naturalness to the group that at once attracted the eye. A similar use of Palms behind the potted Chrysanthemums on the platform, in the lower room, devoted to cut blooms, would have vastly improved the general effect. Even as it was, the grouping of the cut specimens, arranged on tables running horizontally, was much better than usual, and each year seems to add to the glory of this superb show.

There are those who irreverently declare that the exaggerated Chrysanthemum scarcely appeals more to the sentiment than a feather duster, and others who revolt against the conspicuous stakes which destroy the grace of the potted plants; but no one could deny the overpowering splendor of one of the vases of the Society filled with blooms of Eugene Dailedouze, of great size and beauty, which stood directly opposite the entrance; nor of its companion vase of different colored flowers, equally well arranged, which took the first prize. Both of these came from the estate of Hon. John Simpkins, whose gardener, Mr. James Brydon, seems quite as successful in the arrangement of his flowers as in their production. Other gardeners complain that it is impossible to compete with growers on "The Cape," the mild, soft, moist air of that region being so much better for the encouragement of richness and perfection of bloom than the long droughts and dry summers of the neighborhood of Boston. However this may be, the merit of the flowers is undeniable.

Much art also was displayed by Mr. T. D. Hatfield in grouping the Hunnewell collection of plants, which received the first prize, each color being so harmonized with its neighbor as to enhance the charm of each. One wonders sometimes why a Japanese is not invited to preside over the arrangement of a Boston flower-show, so that we might have a touch of oriental imagination to enliven our rather prosaic conception of what appropriate grouping is. It always seems as if the opportunity were missed to a degree; that more might be made of it; that an artistic conception of the whole, with such a wealth of material to work in, might result in a vision of fantastic beauty which would be a lesson in the art of arrangement.

When Dean Hole, in his delightful book about *Roses*, describes that first grand National Rose Show in London, held in 1857 in St. James's Hall, then new and beautiful, we receive the impression of something bewildering in its loveliness, though this is possibly owing to the art of the narrator, but the Boston show is certainly not lovely, though undeniably interesting.

That surrounding, the frame, means something, even in a gallery of pictures, the artists are beginning to show us by their careful attention to the coup d'oeil in their annual exhibitions. Not content with merely hanging their works side by side as of old, they make the halls and staircase tasteful and beautiful with other adornments to enhance the value of the paintings. To begin with, it seems as if a building for the exhibition of flowers should have an architectural attractiveness of its own—that the interior should be planned so that there might be room for surprises; that alcoves, recesses with fountains, possibly a

permanent arrangement of large foliage-plants as a background for the exhibited specimens should be provided.

A bald parallelogram of a room, with plain walls and staring windows on both sides, it is difficult to render picturesque by any collection of the rarest and most splendid blossoms. From our advancing civilization and increased interest in real and refined beauty of floral arrangement ought to grow something better than this. It seems as if somewhere in the spacious park systems of our great cities some spot might be found where a building wisely planned especially for such a purpose could be placed. The approaches should gradually prepare the mind for the impression which the interior would give. Here a softly lighted vestibule in which plants with decorative foliage could be skillfully disposed should lead to a recessed hall, with a central fountain begirt with shade, where in vine-clad alcoves easy of access the specimens could be displayed. A flower cathedral, in short, with its attendant chapel, and a high altar for the display of the committee's choice for the first prize, might be constructed by some skillful flower-loving architect, who could give us a practical conception, enhanced by every appropriate decorative device. Such a building, possibly, could not be the outcome of one generation, but it is a good ideal to strive for.

It is most interesting to see into what individual flowers can be developed by unremitting and intelligent care, but there is a higher love for flowers which yearns to see them fittingly disposed, to awaken in the popular mind a conception of the true value of floral arrangement, and to turn the great artistic current of feeling in that direction as well as in that of outdoor gardening. We greatly need lessons in this art; we lack examples; we ought to be taught by masters in floral design how best to show the specimens on which so much loving care has been lavished, and as one of the aims of horticultural societies is to develop taste as well as skill, this wise endeavor should find expression first in an appropriate and beautiful building for flower-shows.

It is small wonder that a hall in Boston which dates from the early forties is not thoroughly in keeping with the artistic progress of a half-century of improvements in taste. It was creditable for the time of its erection, but the city has outgrown it now, and the Horticultural Society should demand more artistic headquarters, to be in keeping with the great advance in taste everywhere.

Hingham, Mass.

M. C. Robbins.

The Exoascaceæ of Stone Fruits.

THE commoner forms of the fungi belonging to the Exoascaceæ are quite well known throughout the United States. These forms are popularly called "leaf curl" and "plum pocket," the former being a wrinkled or curled condition of the living leaves of the Peach, while the latter is a large hollow abnormal transformation of the ovaries or young fruits of the cultivated Plum. A critical study of material collected during several years from various parts of the United States serves to show that several species quite different from the *Exoascus deformans*, Berk., and *E. Pruni*, Fuckel, exist, producing a number of quite characteristic deformities of the branches, leaves and fruits of the genus *Prunus*.

In all of the prunicolous species of *Exoascus* in the United States the mycelium, or vegetative portion of the parasite, is intercellular, that is, it grows only between the cells of the host, not even sending short branches into the interior of the cells. It is very irregular in its course through the tissues and in the size of its cells. These are cylindrical, oblong, clavate, or oval, and are joined in an irregular chain without order between the cells of the host. The mycelium may be quite abundant in some species and presents a very intricate network of threads. In other species, or in parts of the plant not so seriously affected, or in parts where the mycelium is passing the winter, it is more scanty, frequently consisting of isolated, oval or irregularly oblong cells. The growth of the fungus in the leaves, twigs or fruit stimulates these tissues of the host to an increase in the number and size of the cells, so that characteristic malformations of the diseased parts appear. In the leaves the increase in the number of the cells of the diseased portion causes that part of the leaf to arch upward or

downward in a series of irregular folds, or a somewhat circular spot becomes strongly arched in one direction, forming a deep, wide-mouthed pocket. The twigs become enlarged in diameter and variously contorted, or an early development of the buds is stimulated, producing what are commonly called "witches' brooms." Again, the fruit becomes transformed into a large spongy mass of tissue, which is hollow and devoid of the "stone" or "pit"; or only one side of the fruit is affected when irregular, one-sided swellings of similar tissue are developed. The floral envelopes in some species partake also of the hypertrophy, and in other cases only the superficial portion of the fruit is affected when the "stone" is normally developed. In the latter case sometimes a warted condition of the fruit appears. The young leaf-buds in some species are transformed into a large spongy hollow mass of tissue much resembling in texture that of the "plum pockets."

From the interior of these deformed tissues the mycelium grows to the surface and spreads, by branching out over the epidermal cells just beneath the cuticle. The cells of the subcuticular layer soon become nearly equal in diameter, and are usually developed in such numbers that eventually they are closely crowded, when they become angular in outline. Each of the cells of the hymenium elongates perpendicularly to the surface, forming cylindrical or clavate cells, which stand close together upon the surface like the pile on velvet, and give the appearance of a white bloom on the affected parts. These cells contain the spores of the fungus.

The following species are known in the United States:

Exoascus deformans (Berk.), Fuckel, occurs in the leaves and twigs of the Peach (*Prunus Persica*). The twigs are slightly enlarged, but are not transformed into a spongy mass. The leaves are thrown into a series of irregular folds, frequently transversely to the long axis of the leaf. Sometimes the arching of the leaf takes place more strongly on one side than on the other, when a strong convexity appears on that side. When a large portion of the leaf is thus affected it frequently bulges out on one side along the middle, and the edges of the leaf are drawn toward each other, the leaf appearing as if strongly inflated. In the affected portion of the leaf the green color pales and the parts are more or less brightly colored with reddish and yellowish tints. The leaf tissue at these parts is also thickened and assumes a cartilaginous consistence. The parenchyma cells are frequently very much elongated and curved, or sinuous in form. The mycelium is perennial in the leaf-buds, passing the late summer, autumn and winter months in the tissue of the leaf-buds, and in the following spring grows out with the developing leaf, multiplying more abundantly in certain parts than in others. This is the reason that some parts of the leaf are affected while others are free.

Exoascus Cerasi (Fuckel), Sadeb., causes "witches' brooms" on escaped trees of *Prunus Avium* at Germantown, Pennsylvania. Instead of forming spurs, or flower-buds, as in ordinary branches, twigs are developed, giving to portions of the trees a broomy appearance. The fruiting condition of the fungus is frequently confined to the lower side of the leaf and the leaves are not curled. This has been known as *E. Wiesneri*, Rathay, and is sometimes confused with *E. deformans*.

Exoascus insititizæ, Sadeb., forms small "witches' brooms" on the ends of branches of *Prunus Pennsylvanica*, at Temple, New Hampshire. Several small twigs, frequently growing from the ends of a larger one, are somewhat curved to one side. The leaves are not much deformed, presenting a series of small folds, and a large portion of the under surface is covered with the asci which give them a grayish white appearance.

Exoascus Pruni, Fuckel, deforms the fruit or young ovaries of *Prunus domestica*, forming the well-known "plum pocket." According to the characters which Sadebeck applies to the distinction of species, this *Exoascus* is at present only known on the cultivated Plum in the United States.

Exoascus confusus, Atkinson, occurs on the floral envelopes and ovaries of *Prunus Virginiana*. The floral envelopes are enlarged and distorted, becoming persistent, while the ovaries are enlarged and elongated, being transformed into a spongy tissue much the same as that which results from *E. Pruni* on the cultivated Plum.

Exoascus Farlowii, Sadeb., produces similar deformities of the floral envelopes and ovaries of *Prunus serotina*.

Exoascus varius, Atkinson, produces a folding or arching of the leaves of *Prunus serotina*, and the ends of the twigs are also deformed, though a spongy tissue is not developed. In external appearance this resembles the Peach-leaf curl, but in the structure of the fungus it is different. In the southern states frequently trees of *Prunus serotina* will be very badly affected with both *E. varius* and *E. Farlowii*.

The leaves of *Prunus demissa* are affected with an *Exoascus*, which may be the same as this species which curls the leaves of *P. serotina*. Sterile conditions of an *Exoascus* have been found on the leaves of *P. Virginiana* near Ithaca, New York, which may probably belong also to this species. The twigs are sometimes deformed and strongly curled, but thus far no mature condition of the fungus has been observed by myself.

Exoascus communis, Sadeb., is found on several species of *Prunus*, affecting the fruits or young ovaries in the same manner as *E. Pruni* does *Prunus domestica*. It is found on *P. Americana*, *P. nigra*, *P. pumila* and *P. maritima*.

Exoascus mirabilis, Atkinson, originates a peculiar deformity of the leaf-buds and twigs of *Prunus angustifolia* and *P. hortulana*. The buds and twigs are transformed into a large, usually clavate, mass of spongy tissue resembling in consistency that of the plum pockets. Frequently these structures are hollow. The fruit of the fungus is borne upon the surface of the affected portions. Sometimes the entire leaf-bud is affected so that none of the leaves are expanded, and in other cases the leaves may be partly expanded when the fungus makes the serious attack, and the deformed bud will present leaves partly or fully expanded. A variety of this species attacks the fruit, affecting usually only one side of the fruit, and causing it to turn or twist to one side. Unless a large portion of the surface of the fruit is affected, there is no cavity in the deformity. The variety has been named *E. mirabilis*, var. *tortilis*, Atkinson.

Exoascus longipes, Atkinson, is a second species producing plum pockets of the fruit of *Prunus Americana* in the vicinity of Ithaca, New York. It differs from the above-named species, affecting the fruit by the very long stalk-cells of the asci, which penetrate far between the cells of the host.

Exoascus rhizipes, Atkinson, produces deformities of the fruit and leaf-buds of *Prunus triflora*, similar to those of *P. angustifolia* by *E. mirabilis*, but is differentiated from that species by the very long and much-branched stalk-cells, which penetrate even farther between the cells of the host than is the case with *E. longipes*. The specimens were collected at Auburn, Alabama, on the farm of the State College.

A third species is found upon *Prunus Americana*, this time upon the leaves, causing a series of very fine folds, with the asci developed upon the under side. Frequently the ends of the twigs are somewhat deformed, and then especially are the petioles and bases of the leaves brought under contribution to the fungus, resulting in the blackening and ultimate death of the parts affected. This species has been named *Exoascus decipiens*, Atkinson. The half-grown fruit of *Prunus Americana* is also affected by an *Exoascus* which grows only in the superficial tissues, causing wart-like prominences upon the surface. The asci are near the type of those upon the leaf, and not those of the other species occurring on the fruit of *P. Americana*. The material thus far examined has not been sufficient to determine whether or not it is a distinct species from that growing upon the leaves, though there seem to be some differences. For this reason it is at present placed as a variety of *E. decipiens*, namely, var. *superficialis*.

One of the most interesting of the species occurring on the fruits is *Exoascus cecidomophilus*, Atkinson. This occurs upon the fruits of *Prunus Virginiana* which have been deformed by a cecidomid larva. The insect produces an elongated and hollow gall, which is open at the proximal end. The gall is smooth within, and the tissue is hard, in contradistinction to the spongy tissue of the common plum-pockets. The fungus grows in the superficial tissues of the gall, probably only over a portion of the surface.

These fungi are communicated to other trees in two ways, by infection from the spores and also by budding in nursery-stock as well as by budding into trees in the orchard. This, of course, is not done knowingly by the nurseryman, for at the time that the buds are selected for budding all of the leaves which are affected have probably fallen from the trees. If the trees were carefully examined during the early part of June or the latter part of May, and the unaffected ones selected at this time for obtaining the buds, this common source of infection might be prevented.

Cornell University.

George F. Atkinson.

A Serious Blight of Cosmos.

ONE of the best of the plants which flower out-of-doors in autumn until the coming of hard frosts, the hybrid *Cosmos*, has been attacked by a blight this year, which is already serious, and threatens to become general. A mildew (*Erysiphe Cichoracearum*) so abundant upon many other of the *Compositæ* is frequently seen upon the

foliage of the *Cosmos*, but it is to a much more deeply seated fungus that reference is here made. The first effect of this enemy is seen in the brown discoloration of the stem or branches. There seems to be no uniform place or method of attack, but it is apt to get a foothold at the tips of a stem that has been pinched off, and spread from there to the branches that develop below. The growth of the parasite so weakens the branches at their point of union with the main stem that they frequently break at the juncture, and a diseased plant may have one or more of its lower branches with their tips upon the ground while still



Fig. 72.—Blighted Plant of *Cosmos*.

attached to the main stem. In other instances the blight begins midway upon the branch, and causes it to break at that point. This is shown in the above figure, which is from a photograph of a plant entirely ruined by the blight. The peculiar way in which the fungus spreads in the stem is shown in fig. 73, page 465. The darker portion is diseased, and the blighted bases of the branches are well shown upon the right side of the main stem.

The fungus, which is a species of *Phyctæna*, apparently undescribed, after vegetating for a time, produces its peculiar fish-hook-like spores in vast numbers in minute dark pimples, and when water is applied to the pimply surface

of a blighted stem the spores ooze out and are carried away to other portions of the plant. This blight of the Cosmos is such a recent discovery that no experiments have been made, so far as I am aware, to check it. It is most likely that the standard fungicides would avail much. Any of the readers of GARDEN AND FOREST who have observed this blight in former years, or have any personal knowledge of attempts to control it, are requested to send notes of their experience or observation to this journal or to the writer. One grower is inclined to the opinion that he saw something of it last year, but this season he lost the greater portion of his Cosmos-plants.

New Brunswick, N. J.

Byron D. Halsted.

New or Little-known Plants.

The Loganberry.

MUCH has been said in California about a new hybrid berry of great beauty and promise, introduced to the public by the Agricultural Department of the State

University, at whose experiment stations it has been tested for several years past. The fruit is now sold in the San Francisco markets, where it is becoming popular, and plants are being grown on a large scale by various nurserymen east and west, so that it seems time to describe its characteristics and give some notes upon its history.

A few words about the west American species of *Rubus* will make the parentage of the Loganberry more clear:

The Pacific coast has very few wild berry fruits of notable value. The famous Salmon berry, *Rubus Nutkanus*, of the Raspberry type, widely spread over the western part of the continent, has a variety (*velutinus*) which belongs more distinctly to the northern California coast, where it is highly esteemed, but it does not grow well elsewhere. Throughout the Coast range and large portions of the Sierra, a yellowish-red Thimbleberry, *Rubus leucodermis*, flourishes, that occasionally carries a fair crop of fruit, but one may often search a whole acre of Thimbleberry-bushes in the season without obtaining a double handful. Two other species of Raspberries are found on the coast, but none of any economic importance except to the hybridizer.

In Blackberries, the Pacific coast has one very variable but important species, *Rubus ursinus*, bearing an oblong, sweet, highly flavored fruit. This berry still grows in immense patches along the river-bottoms, fills the ravines,

and even extends far up among the Oaks and Manzanitas on dry hillsides. If it fruited abundantly it might long ago have become the parent of many valuable varieties, as has been the case with *Rubus villosus*. Occasionally, in rich, sheltered places it bears so heavily that people come for miles to camp in the berry-fields and gather the delicious fruit. Variable in growth, in leaves, and in many other particulars, it seems to vary most in fruitage, and offers peculiar advantages to the skilled hybridizer. As with other members of the family, carefully selected plants from the woods and hills, transplanted to the garden amply, repay attention. A white variety, found in Del Norte County, has been somewhat disseminated in California, and several other varieties have gained some local reputation. The Oregon Everbearing, one of the very finest garden Blackberries known on the Pacific coast, appears to contain some *Rubus ursinus* blood.

The most remarkable sport of the native Blackberry is the Aughinbaugh, one of the parents of the Loganberry. The Aughinbaugh was found growing wild on the sandy Encinal, or peninsula of Alameda, a good many years ago, by a pioneer who once owned many acres there. Aughinbaugh removed it to his garden, cultivated and disseminated it. He lost his estate and died in poverty; a city is built over his pasture-lands, but the wild berry-vine he transplanted from under the Oak forest which then covered the Alameda shore, has preserved his name from oblivion. The Aughinbaugh Blackberry, as I have grown it from his original stock, is a beautiful vine of trailing habit, like a Dewberry, but with much larger, darker leaves, and of extremely vigorous growth. Being pistillate, it does not bear well unless planted with other varieties. Properly fertilized, on good soil, and well trained on a fence or trellis, its bearing powers are often astonishing, and in quality it is very fine, but it has never become popular. I may add that for some reason the nurseries did not take it up, and one only finds it now in a few old gardens. Still it ought to be more generally distributed. It has been crossed with Crandall's Early, producing a promising line of seedlings.

The Loganberry originated several years ago in the garden of Judge J. H. Logan, of Santa Cruz, from self-sown seeds of the Aughinbaugh springing up in the moist warm soil of that sheltered district. The other parent is supposed to be a Raspberry of the Red Antwerp type. Raspberries of several sorts grew alongside, and, in fact, intermingled. The Loganberry shows so clearly the mingling of both types that no horticulturist who studies the fruit has doubted that it is a true hybrid of Aughinbaugh Blackberry with some large red European Raspberry. The result is a very sturdy plant of rambling or trailing growth, needing support to be at its best, but even in this dry climate it is a vine of unusual substance and healthfulness, resembling the Aughinbaugh Blackberry, but readily distinguished from it in the field. The berry is large and solid, resembling the Aughinbaugh in shape and retaining its delicious wild flavor; it is dark red to purple when fully ripe, and shows in texture, in the easy slipping from the core, and partly in flavor, the Raspberry parentage.

Tests made in different soils and in some very dry situations have shown, so far, that the Loganberry will grow and bear a fair amount of fruit in localities where the Gooseberry, Currant, high-bush varieties of Blackberries and Dewberries have entirely failed. As I have said, plants of *Rubus ursinus* are sometimes found thriving very well on dry hillsides with Scrub Oaks and Chaparral, but seldom bear fruit to any extent in such arid places. In other words, some individuals of this variable species of *Rubus* grow in very hot, arid and barren places, and the original Aughinbaugh, though found on a sandy peninsula, near the Bay, instead of on a hillside, seems to have had the power to transmit this resistant quality, together with an increased productiveness.

The Loganberry is now grown for market near Santa

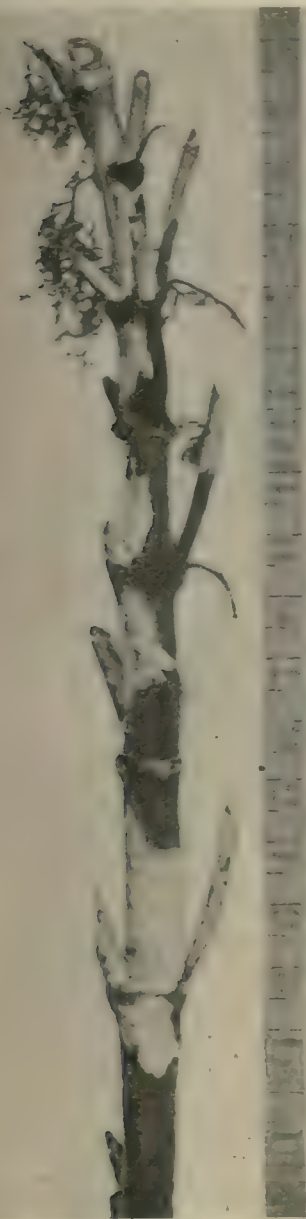


Fig. 73.—Blight on stem of Cosmos.—See p. 464.

Cruz and Watsonville, and the results are said to be gratifying both in regard to price and yield. Like the Blackberry, the season is a long one, but I have no data from the berry-gardens. It is certain, however, that the area planted is being extended rapidly. The Loganberry is hardy wherever tested in California, but this proves nothing in respect to its value in colder climates, though its wild Blackberry blood must be an advantage, possibly sufficient to counteract the weaker Red Antwerp cross. The fact that hardly a trace of the Raspberry remains in vine, leaf, or general appearance supports this view. The illustration below is from a photograph taken last July.

Loganberry-plants will be high-priced for a time, because, as with the Black-cap Raspberries, we have to layer the long canes or else root the tip ends. The new plants grow rapidly, and with proper care should be fit to fruit the second year. The University of California distributed it

two weeks or more later, it helps to prolong the flowering period of this most useful group of shrubs. It is a stout shrub, sometimes reaching a height of fifteen to eighteen feet. The leaves are four or five inches long and nearly as broad. The young shoots and petioles and cymes are covered with a stellar pubescence. Its fruit is more beautiful than that of *V. dentatum*, being a dark blue with a rich bloom, and it has the merit of holding its fruit as well as its leaves much later in the season, and its foliage turns to brighter colors in the autumn. It has never been very widely planted, although it has been sold from nurseries under several different names. It is perfectly hardy, at least as far north as Boston, and it is one of those good native shrubs which have been overlooked by planters, although it is most effective for use in public parks or other situations where heavy masses of foliage are wanted.

PARROTIA PERSICA.—This is a large shrub or small tree



Fig. 74.—Plant of the Loganberry growing near Santa Cruz, California.—See page 465.

quite extensively last year, but now the plant is in the trade, and, of course, will not be again sent out. The forthcoming annual report of the California Experiment Stations will contain a more complete history of the Loganberry, written by Professor Wickson.

Niles, Calif.

Charles Howard Shinn.

Plant Notes.

VIBURNUM MOLLE.—This plant was figured in *GARDEN AND FOREST* (vol. iv., page 30), but the longer it is tested in cultivation the more evident its good points become. The species ranges through the southern states, extending as far south as Florida, and its northern home is on the islands of Nantucket and Naushon. In general appearance and in the shape of its leaves, flowers and fruit it bears a likeness to the Arrow-wood, *Viburnum dentatum*, but as it blooms

which is much more beautiful in autumn than at any other season. The flowers, which appear before the leaves, are a little more than clusters of reddish brown stamens, and can hardly be called ornamental. In early summer the young growth takes on a shade of pink, which is rather pleasing. It has the merit, too, of a robust, stout habit, but it is not until autumn that it can be called beautiful, when its late persisting leaves, which begin to turn at the tips, gradually change into the brightest of orange and crimson, and sometimes into a rich chocolate-brown. It then becomes—after the leaves have quite fallen from most trees and shrubs—a really striking object. It belongs to the Witch Hazel family, and although it is a native of the country south of the Caspian Sea, it is perfectly hardy in New England.

ROMNEYA COULTEI.—This interesting California plant does not seem to get much of a foothold in eastern gar-

dens. There have been numerous notes about it in GARDEN AND FOREST, but we do not now remember any report of successful flowering in the open in the northern states. Mr. Gerard writes that he has made numerous attempts to grow this plant from seeds and cuttings without success, till he received, in the spring of 1893, from Mr. E. D. Sturtevant, of Los Angeles, California, some strong roots, which were about as thick as a lead-pencil. These were planted in different locations, but the plant soon showed that it would not endure overmuch moisture at the roots. It grew moderately in partial shade. On the contrary, planted in a well-drained, fairly dry place, fully exposed to the sun, it grew very vigorously, and the first year made a strong growth three feet high and as much through. It was under the lee of the house, and the roots were protected with a low mound of earth and manure during the winter. New shoots appeared somewhat late in the spring, and eventually formed a many-branched plant, which occupied a space about six feet by four and four feet high. With its deeply cut glaucous leaves and light green stems this plant is attractive and would excite attention in any garden. Its handsome flowers have not appeared, however. What is the reason of this failure? Is it true that flowers appear only on the year-old stems? These stems are scarcely woody enough to survive our winters unscathed, but Mr. Gerard hopes to save some of them under mats this year, since they will survive ordinary frosts unprotected till late in the year, when they are well hardened up at the end of the growing season. The roots of this plant, it may be said, are creeping, and the shoots from the main stem are inclined to droop and become prostrate, so that the plant occupies considerable space. The plant seems difficult to transplant while growing, and, no doubt, it is advisable to secure the roots while dormant.

Cultural Department.

Peach-growing.

SOME nine thousand acres of land in western New York are devoted to the peach industry, and, in accordance with the new law of that state, Professor Bailey has been making reports to the Commissioner of Agriculture on the condition of that industry. The facts in the case, and the counsel based upon them, seem so important that we give our readers a digest of parts of this report. Professor Bailey thinks that the peach industry, more than any other pomological interest, suffers peculiarly from careless methods. The first error is lack of cultivation; the second, inattention to borers and yellows; the third is neglect to thin the fruit, and the fourth is carelessness in marketing.

LOCATIONS AND SOILS.—Many orchards are planted on land which is unsuited to them, such as heavy clay soils, or low lands with imperfect drainage of water and of air. The ideal Peach soil is deep sand, upon which trees make a hard growth. The wood matures early, the trees bear well and the fruit has high color and flavor. It is such soils and exposures which have made the Peach region in Delaware, New Jersey, the eastern shore of Lake Michigan and some parts of the south famous. Peaches may be made to grow on heavy land, but the trees must be severely headed in. The gravelly soils about the New York lakes are well adapted to the Peach, but in the interior part of that state, away from the lakes, Peaches only thrive on elevated lands which are naturally drained and escape the late spring frosts, so often disastrous to the peaches on lower places.

CULTIVATING AND FERTILIZING.—Peach orchards should never be cropped after the third year, and on sandy lands especially, if the trees stand less than twenty feet apart, they should never be cropped from the time they are set. Frequent stirring of the surface-soil from May until August is desirable, and thereafter, perhaps, a green crop should be raised, to be plowed under next spring. The orchard should, under no circumstances, be sowed to grain or seeded down, but it is easy on strong land to produce an overgrowth. Trees grow quickly to a great size, they bear poorly, and in some cases are never productive of much fruit; they run to wood, and the wind tears them to pieces. In addition to land which is too

strong, too free a use of barnyard manure or other nitrogenous fertilizers is often made, and cultivation is continued too late in autumn. Potash and phosphoric acid, and not nitrogen, are the true fertilizers for Peaches. Ashes, muriate of potash and bone fertilizers make productive trees. Tillage with green crops, to turn under at the end of the season, will furnish sufficient nitrogen generally, and even then it is possible to plow under too much crimson Clover. Nitrogen, it is true, lies at the foundation of successful agriculture, but its greatest benefits are to be had from annual crops in the farm and garden. It can also be applied advantageously to newly set fruit-plants, but it can be easily used to excess.

PRUNING.—The differences of opinion as to the proper methods of pruning turn on three practices: (1) short trunks with rapidly ascending branches; (2) high trunks with more horizontal branches; and (3) shortening in or heading back the annual growth. Each of these methods has distinct advantages for different cases. The nature of the soil is the controlling factor in deciding which is preferable. The natural method of pruning trees on a sandy soil is to allow the tree to spread at will into a vase form, with no heading in—that is, to let the trees have short trunks and forking branches. The low trunk allows an open top, where the peaches color better. High-topped trees are more easily tilted, and it is quite as easy to pick their fruit. It is the better method on rich land, for it keeps the tree within bounds. Heading in is usually done in winter, and one-third to a half of the annual growth is removed. This heading in always makes a thick-topped tree.

THINNING FRUIT.—No two peaches should be allowed to develop nearer than five inches apart. No work of the orchard pays better than thinning the fruit either in the price which the remaining produce brings or in the energy which is saved to the tree. When regularly thinned the tree bears every year unless injured by frost. The fruit must be picked sooner or later, and the work is more easily done in June than in September, so that no labor is lost. The thinning should be delayed until the fruit is the size of the end of a man's thumb, and by this time the "June drop" has occurred, and the fruit can readily be seen.

MARKETING.—But if growers are negligent in thinning, they are positively careless in marketing, and everybody knows that nicely packed fruit brings good prices wholly independent of its quality. Hand-boxes containing sixty wrapped California peaches have sold from \$2.00 to \$4.00, although of inferior quality when they reached our market, and alongside of them our own peaches, of better flavor, have sold for twenty-five cents to seventy-five cents when carelessly dumped into a half-bushel basket. The main faults in handling peaches are too large packages, lack of grading and selection, lack of covers to the basket, which allows the fruit to be crushed, when it will have a disagreeable and forbidding look, and cannot command a fair price.

Grapes under Glass.

IN the earliest house the vines should be pruned at once, if this has not been done already, and in a few weeks more all the houses may be pruned, as opportunity offers. The vines should be cut in as closely as can safely be done, as this prevents the spurs from getting long and unsightly. They should be well washed with some insecticide; the old Gishurst compound, in a good strong solution, will answer the purpose well. Before washing remove any bark that is loose, and no more, as the old custom of scraping the vines is undoubtedly a mistake. The wood-work of the house, if it does not require a fresh coat of paint, should also be well washed, using plenty of soap and warm water, and all parts around the brick-work and pipes should be syringed with a strong solution of anti-pest or other insect destroyer, as mealy-bug and other insects are apt to lodge in the crevices. After removing about an inch of the surface-soil give a liberal dressing of bone fertilizer, and cover this up with about two inches of fresh fibrous loam, or more if necessary. Most borders, especially those that have been recently made, keep settling a little, and they may require more than two inches of fresh material to keep them up to the level.

All the outside borders should have a good covering of fresh stable-litter to keep the soil from being frozen, and the temperature of the houses should be maintained as low as possible, using just enough fire-heat on cold nights to keep the frost out. Every possible opportunity of admitting air should be taken advantage of until about the 20th of December, when the earliest house should have a good watering and be kept rather closer for about a week. After this time the night temperature may be raised to forty-five degrees, and the vines

sprinkled with tepid water morning and night, to encourage them to break. The temperature should be gradually raised; say, five degrees every week, until a night temperature of sixty degrees is attained, and a rise of fifteen degrees by sun-heat allowed.

Tarrytown, N. Y.

William Scott.

Helleborus niger.—This plant, the true Christmas Rose, is too rarely seen. As a thoroughly hardy plant it is often a failure, in northern latitudes, at least. I should judge from the report of a friend that it would do well in the south, and should be tried for growing into forcing-stock, as is done in Holland. In England it has become quite a florist's flower, being forced for market with Lily-of-the-valley and Dutch bulbs. Imported roots are mostly used for forcing, but those which are usually brought from Holland for this purpose are inferior varieties, usually *Helleborus niger angustifolius*. Maximus, the Scotch variety, is by far the best, but is held at a rather high figure as yet. I saw the other day at Mr. Powers' place, in South Framingham, about one hundred plants of the last-named variety in a remarkably thrifty condition, showing large stools of flower-buds already. Mr. Butterworth, the gardener, had them planted in an old frame, protected with mats and shutters. This is their second winter, and they appear perfectly at home in good rich garden-soil.

Imported plants sometimes look as if they had been grown in peaty soil, and I have seen plants collected on the Austrian Alps and in Tyrol with lumps of clayey shale hanging to them and their roots all twisted and flattened as they had pushed through crevices of rocks, and I have grown them as well as need be in plastic loam of the brick-makers' variety, so that the question of soil need not be considered as an element of success or failure. It is more a matter of condition of climate and very much of location. The plants spoken of are shaded by an old *Arbor-vitæ* hedge, and I should think this the best position possible. Mr. Butterworth says the plants commence blooming toward the end of January, and continue until the end of February. They last a long time when cut, and bring a high price in the market. He hopes in a few years to have a large stock, so that a section may be lifted each year for forcing the season. These will be divided afterward, rested a season or two and used again.

The blackness indicated by the specific title sounds like a slander to one who contemplates the pure white interior of the flower. This title refers really to the poisonous properties found in the root.

Wellesley, Mass.

T. D. Hatfield.

Isolomas are attractive Gesneraceous plants easily grown in a warm house. There are many species, mostly South American. The French florists have hybridized them with the *Tydas*, and the botanists now class these plants together. The hybrids now in flower are strong-growing plants, a foot high, with green velvety leaves and numerous flowers borne in axils of the leaves. These flowers are tubular, with five rounded lobes, which are reflexed. The plants are of quiet, rather than showy, beauty. The colors are brilliant scarlet and shades of reddish purple, and the lobes are spotted with yellow. They are readily propagated from the leaves or the long rhizomes, which are abundant.

Elizabeth, N. J.

J. N. G.

Correspondence.

Papyrus Antiquorum.

To the Editor of GARDEN AND FOREST:

Sir,—The recent note in GARDEN AND FOREST, which suggested that *Sternbergia lutea* is traditionally the Lily of the Field, reminds me that some commentators assert that *Papyrus Antiquorum* has disappeared from the streams of Egypt in exact fulfillment of the prophecy, Isaiah xix., 7: "The paper reeds by the brooks shall wither away and be no more."

This plant, by the way, is not nearly common enough in gardens. It is most unique, effective and of a character to give much pleasure in the borders, or where it is well grouped. Its great head of thin leaves, which terminate the bold naked stems, renders it distinct from anything else in cultivation. While it is a true aquatic plant, it will grow finely in moist borders, though it does not become so tall there. Mr. Lee, at Northampton, Massachusetts, has grown this plant into great specimens in the border by planting it over the steam-pipe leading into his tank. Here, with the addition of moisture, it produces masses with stems ten feet high. This is, of course, a tender plant, and needs greenhouse protection in winter. It is readily propagated by shoots, which are freely produced. It

usually flowers here in summer, and seedlings can be grown, though plants are supplied in spring by dealers in aquatic plants at a popular price.

Stamford, Conn.

J. Nicoll.

The Garden in Autumn.

To the Editor of GARDEN AND FOREST:

Sir,—If our autumn weather were usually as clear and mild and as free from frosts as it has been this year in this latitude, the writer of the leader in GARDEN AND FOREST for October 17th, would probably have spoken with more enthusiasm of the charms of the autumn gardens. If they are ever dull and barren it is from no lack of material, but it may be from the fact that they exact more care. The garden of my more energetic years was largely one of autumnal flowers, but it has been gradually and almost completely transformed and filled with plants which flower in the first half of the year because the early-flowering plants make less strenuous demands upon my time and attention. Many of the best autumnal flowering plants require constant care during a long season, and make a constant draft on energy which cannot always be spared as one grows older. At present, while perfectly content to enjoy the glory of the woods and fields, I should say that the ambitious gardener, anxious for results and crops, can secure a more glowing garden at this season than any other.

The autumnal garden is not to be despised, though the short days conceal its glory from the late-returning man of business.

Elizabeth, N. J.

J. N. Gerard.

Exhibitions.

Flowers at the New York Farmers' Club.

LAST week, in connection with the monthly meeting of the Farmers' Club of the American Institute of this city, there was an exhibition of flowers, which, although not large, contained many well-finished cut *Chrysanthemums* of the very best varieties, and some good standard plants grown by Siebrecht & Wadley. A new seedling, named Castilian, was exhibited by John May. It is a large loosely incurved flower, with the petals pink on the outside and terra cotta within. Among the tall flowers shown by Ernst Asmus, in large vases, the best were the white Flora Hill, the pearl-pink President Smith and the deeper pink and more regularly incurved Maud Dean. In the collection from Peter Henderson & Co. blooms of Golden Wedding were shown of as good size and finish as were ever seen in former years. The King of Ostrich Plumes is another good flower, with lacinated petals adding to its fluffy effect. Admirable single flowers in vases were shown by George H. Hall, gardener to Joseph E. Brown, of Bellport, Long Island. The separate blooms, cut with short stems, each rested on the mouth of a vase, giving them much the effect of a board exhibit, and the size and color of each flower was shown to advantage. A background of tall *Chrysanthemums*, in vases, was a pleasant feature of this display, and a vase of Mrs. W. S. Kimball, a seedling introduced by Pitcher & Manda two years ago, made a striking picture—the flowers a delicate lavender-pink tipped with red in the centre. Mrs. F. L. Ames was the best yellow. Mrs. W. K. Vanderbilt, a seedling introduced last spring, with large flowers, was not remarkable for its beauty, although noteworthy for having five distinct centres. Other good flowers were shown by Alexander Mackenzie, gardener to Walter Gurnee, of Nyack. The beautiful new Tea Rose, Mrs. J. Pierpont Morgan, described in our "Plant Notes" last week, was shown by Mr. John May. This sport of Madame Cusin is much darker than the type, and the petals shade to white at the base. It has a larger and longer bud and is entirely free from the purple tint. The luxuriant foliage is a deep waxy green. Mr. May also showed some fine buds of the now popular Mrs. W. C. Whitney, and Messrs. Siebrecht & Wadley a vase of the new seedling Belle Siebrecht, said to be a hybrid between La France and Lady Mary Fitzwilliam. It is of the Duchess of Albany type and quite striking in its way. It is not yet known whether it will be a plant of the highest value for commercial purposes.

Mr. May's striking trio of new Carnations, Dean Hole, Lena Saling and Maud Dean, again attracted much attention, and we shall have something more to say about them later. Other promising seedling Carnations were shown by H. E. Chitty, Paterson, New Jersey, and some excellent vases of standard varieties were furnished by Dailledouze Brothers, Flatbush, New York.

A rather remarkable collection of seedling *Coleus* of a large-leaved strain, which seems entirely new to this country, was

shown by Mr. W. A. Manda. The foliage was notable for new colors and for the richness of their combination, as also for the large size of the leaves. One of these plants, named Malcolm MacRory, with leaves of solid scarlet and the indentations on the edge tipped with yellow, received a certificate, as did another variety named Charles Weathered, which was as showy as a bright Bertolonia. This variety is crimson, marbled with a very dark brown. This new strain of *Coleus* promises to be useful for verandas in summer. Other noteworthy plants in Mr. Manda's collection were *Dracaena rubro-nigra* and *D. Souvenir de Nice*. They are comparatively rare, and their narrow foliage and open habit will make them useful for table decoration. The Horticultural Department of the Cornell Experiment Station sent an instructive exhibit in the shape of a card, on which were specimens of *Chrysanthemums* affected by thrips as well as by leaf-blight, the new bud disease, etc., labeled so that growers would be able to identify the peculiar trouble from which their plants were suffering.

The regular exercises of the club consisted of an address by Mr. W. A. Manda, in the course of which he expressed regret that the hardy varieties of *Chrysanthemums* were not cultivated out-of-doors, as they once were. He advises the lifting and division of stock-plants the second year, and planting out in early May the roots of such varieties as President, purplish pink; Bob, the favorite red; Val d'Or, yellow; President Hyde, an early yellow; the white and the yellow Madame des Granges; Elaine, white; John Thorpe, magenta. He explained how the plants should be disbudded, so as to get the best flowers. Dr. Hexamer advises the pinching in of the branches before any buds appeared and while the plant was no more than a foot high, so as to make a stocky growth. This should be done about three times before the middle of July. Mr. John May said that there was no need for an amateur to try disbudding; all that was needed would be to keep the beds weeded and to tie up the plants.

When Dean Hole, who had come to the flower-show, entered the room, he was invited to the stand by Dr. Hexamer, President of the Club, and made one of his graceful and happy addresses, the central thought being that a real interest in plant-life is a source of perennial pleasure.

Chrysanthemums at St. Louis.

THE general effect of the *Chrysanthemum* show here was injured, because the plants so much outran the space offered them that it was necessary to break the collection up into small sections. The best cut *Chrysanthemums* were those which competed for the best twenty-five blooms of yellow, white or pink, or of any variety introduced since the year 1891. Among the white flowers the majority were Queens, and the premium in this section went to Mr. Vesey, of Fort Wayne, Indiana. Vivian Morels prevailed in the pink section, and Mr. Richard Frow, of St. Louis, won the first premium here. The yellow varieties were wonderfully good and largely consisted of Golden Wedding. Missouri growers seem to have no trouble with this variety, of which some complaints have lately been made elsewhere. Eugene Dailledouze, which was another great favorite, was shown in good form also, and Mr. E. J. Hill took the second prize with this variety, while the Michel Plant Company, of St. Louis, won the blue ribbon with Golden Wedding. In the class for twenty-five blooms of recent introduction, the Michel Company won with a vase of Harry Lauderbeck, which was judged superior to Mr. Hill's entry of Challenge, because the latter lacked a few days of being at their best. There were excellent blooms of Mrs. William Trelease on good stiff stems, while the varieties Mrs. Twombly, Mrs. Charles Lanier (yellow), Pitcher & Manda, the strange two-colored flower, and the beautiful white, Mrs. J. G. IIs, were remarkable. Mr. Hill, too, showed fine blooms of Judge Hoitt, the only anemone-flowered variety exhibited, and really very pleasing. The finest white flower in the show, and perhaps the best flower of any color, was Philadelphia, which is said to have made a sensation in other cities. It was certainly most effective as shown here.

Recent Publications.

The Birds' Calendar. By H. E. Parkhurst. Scribner's Sons, New York.

Every year the press of this country and of England teems with works upon botany or ornithology, or some kindred branch of natural science; some, ponderous and didactic, treat of the hard facts of nature and her laws;

others, lighter in tone, have for their chief motive the desire to call back the wandering thoughts of men to the restful pleasure to be found in a close observation of nature's works. To this latter class belongs the volume before us, with its pretty and expressive title, *The Birds' Calendar*. Mr. Parkhurst will almost persuade every reader to be an ornithologist, so contagious is the cheerful but restrained enthusiasm with which he sets forth the charms of his favorite pursuit. It has, in his opinion, an advantage over botany in that much can be learned in any one locality of birds whose favorite abiding-place may be in some far distant land. "If one would study the botany of Labrador or of Mexico, he must needs go to Labrador or Mexico for his specimens. Plants adhere to their own zone and climate. But, by the laws of migration, the birds of these, and of even more remote regions, accommodately come to our doors every spring and fall. One can find in his front yard strange visitors from tropic and arctic climes, if he is only up betimes to greet them"; and then he adds that increased enjoyment is due to the fact, that "while other friends come and go, one never loses the friends he makes among the birds, for the attachment is to the class, not to the individual. Specimens die, but the species survives. One never thinks of age in connection with these creatures. They seem to have discovered the elixir of life, and to maintain the perennial freshness of youth. Year after year they arrive at just about the same time in the spring, sing the same old songs, repeat their love passages, nest in the same fashion, and perpetuate all their graceful ways and charming oddities. The old man finds his Cherry-trees plundered by apparently the very same robins that he saw in his boyhood, in his father's orchard, and drives away the same everlasting crows from his corn-field. The woodpecker's vigorous tapping never becomes feeble, nor the song-sparrow's song less blithesome; the burden of sorrow is never lifted from the ever-lamenting peewee, and in season and out of season, with sometimes provoking equanimity, the chickadee is brimful of merriment. These sights and sounds are among the stabilities of life—the changeless things that give equilibrium to nature, binding the present to the past, and spreading a pleasing and restful aspect of permanence over the mutabilities of existence."

Every page of this little volume breathes the fresh, bracing air of the woodlands and thickets, where birds in general congregate; and so tonic is its atmosphere that only upon the writer's own confession could we be convinced that it is the work of a busy man whose home is in the heart of this great metropolis. The observations here recorded were made during the intervals of business in 1893, and his area of observation was confined chiefly to the Ramble, in Central Park, an area of about forty acres, where, between January and December, he has found and identified nearly a hundred species of birds, May breaking the record with sixty species. The work, however, contains much more than a year's individual experience; for, by interweaving with his narrative a discussion of the varied aspects of bird-life, the book gives a view of the subject more comprehensive than a mere record of personal and local observation could offer.

Though disclaiming all scientific knowledge, and writing as a layman for laymen, he gives so clear and definite a description of the outward characteristics of the birds under review that the chronicle will prove serviceable to the beginner in identifying each species, while his knowledge of their habits is both accurate and varied, and his pages have that vividness of impression that can be conveyed only by one who has gained his knowledge at first hand, and for his own pleasure, rather than for the mere purpose of communicating it to others. He knows the notes of each little songster, and can interpret them, not through a formal musical scale, but in terms of passion and emotion. In fact, so familiar is he with the complex personality of his feathered friends that we are almost charmed into the belief that bird-life is but a travesty of human life; and we are rather grateful to Mr. Parkhurst

for touching upon the foibles of these miniature men and women with a gentle hand. The fiery little redstart, he tells us, "hops about from twig to twig, constantly spreading its tail; it has the appearance of being on excellent terms with itself, and of thinking that everybody else will be who sees it—a rather entertaining bit of egotism, as daintily hinted by the redstart as it is vulgarly paraded by the peacock." And of the female bird, he tells us that "should she be bereft of her mate during the critical nesting period, like a practical business woman she accepts, or even hunts up, another partner with surprising, and almost unseemly, celerity."

The book throughout is pervaded with a humor so delicate and kindly as to justify Thackeray's description of the quality as a combination of wit and love. But Mr. Parkhurst's enthusiasm for his favorite pursuit does not blind him to what is due to other aspects of nature. Scattered throughout the volume are many passages which show a keen susceptibility to her beauty and a delicate sympathy with her varying moods, which belong only to one whose heart is at leisure from itself, and whose mind is not unsettled by changes in the tariff or the corruption of city politics.

Notes.

The Horticulturist for August, 1860, contains an editorial reply to a correspondent who had inquired about lawn-mowers, from which it appears that the cheapest hand-mower made at that time cost \$38.00.

In a paper published by Stark Brothers, of Louisiana, Missouri, it is stated that the Hon. Samuel Wade, of Delta County, Colorado, kept a record of the production of a single acre of Ben Davis Apples in an orchard of sixty-four acres this year. From this one measured acre he sold sound apples to the amount of \$760.00.

A pleasant feature of a dinner given to Dean Hole in this city last week was the naming of a new Rose said to be a sport of Madame Testout. The flower is a cream-white of exquisite purity, and it promises to be an acquisition both for cultivation out-of-doors and under glass. It was named by Mr. Robert Craig, President of the American Rose Society, after the guest of the evening.

On the 19th of November we observed that a plant of *Syringa oblata*, near this city, was still holding its foliage, while the leaves of several other species and varieties of Lilacs near it had all fallen. Sometimes the leaves of this Chinese species color well in autumn, but this year they show no such tendency here, although they are still comparatively fresh and green and entirely free from the mildew, which is so generally destructive to the common Lilac.

The brilliant autumn colors of our forests and wayside shrubberies are the cause of constant comment at this season, but we often forget that, besides trees and shrubs, there are plants of humbler growth which are quite as striking in their way as the Scarlet Oak, the Liquidamber, the Flowering Dogwood or the Sumachs. Even as late as November one often observes great splashes of scarlet and crimson on our hillside pastures which do much to brighten the landscape. These are often due to the foliage of the low Blackberry or Dewberry, which has been exceptionally brilliant this year.

Mr. P. Emerson, of Kent County, Delaware, has sent to the *Rural New Yorker* a box of chestnuts which average as large as those of the Paragon, and they are equal in quality to ordinary American chestnuts when eaten with the skins. It is not stated whether the tree contains foreign blood or not, but that is of less consequence than the facts that the nuts are of the first size and of excellent quality. The tree came from a nut which was planted on the farm of Mr. Ridgely, near Dover, sixty years ago. It has grown to a great size and is very productive every season; one year it produced five and a half bushels of nuts, which were sold for \$11.00 a bushel.

Chestnuts are plentiful, small nuts from our northern states selling on the streets for fifteen cents a quart. The large glossy French and Italian chestnuts are sold by the pound for the same price. Black walnuts from the Blue Ridge are this year fairly abundant, and sell for fifty cents a peck. Butter-nuts bring the same price. The crop of the Shell-bark hickory-nut is very short, and whereas a bushel could be

bought for \$1.25 a year ago, it now costs \$4.00. The larger thick-shelled fruits of *Hicoria tomentosa*, known as Bullnuts, bring only \$2.50 a bushel. No beech-nuts or hazel-nuts have yet been offered this year, though these nuts are occasionally seen in our markets. Pecans began coming from the southwestern states early in November, Louisiana sending large quantities, while the bulk of the supplies come from Texas. In the trade they are classed as ungraded and polished. An average retail price is fifteen cents a pound.

Experiments have lately been made with an invention for preserving fruit while in transportation, which may supersede the use of refrigerator-cars for carrying fresh fruit. It is the invention of a clergyman in Alameda County, California, who has designed an air-tight car, in which carbonic acid gas is poured about the fruit to the exclusion of all air and germs of decay. A load of fruit has been sent in one of these cars to Chicago with success, and it is said that a test car-load sent from San Francisco to New Orleans and back again, was found, after two weeks on the road, to be in good condition. It is claimed that the gas is much cheaper than ice.

A first-rate collection of Chrysanthemums has been on exhibition in the glass houses of Prospect Park, Brooklyn, during the present month. The plants are not single-flowered specimens, and, therefore, the flowers have not grown to the largest size, and are not up to the full finish of the florist's standard. They are, however, much better for the purpose of a long-continued and instructive exhibition as they are, having been grown in pots all summer for the purpose of forming compact plants for decorative use in the conservatory. Perhaps there are a hundred varieties all told, and the exhibition might be improved in general appearance by weeding out some which are of too straggling habit or show too much centre; nevertheless, there are obvious reasons in a place like this for growing a sufficient number of varieties to furnish a comprehensive view of all the different types. For purposes of popular instruction the careful and accurate labeling of the plants is a great and really invaluable aid. Last week we observed there some specially good plants of Cullingfordii, Golden Wedding, Ivory, Mrs. L. C. Madeira, President Smith and W. H. Lincoln. The houses were thronged with interested visitors.

The short season of comparative scarcity in fresh fruits in our city markets, after the abundant summer supply, is already past, and the fruit stores are now making attractive displays of the early winter sorts. California Flame Tokay grapes still linger in the market, and though no longer in prime condition they brought, at wholesale, on Monday, \$2.75 for a half-crate of twenty pounds, while last week some full crates sold at \$7.00, the highest price ever reached in this city. This standard variety is now being replaced by the equally showy and larger Emperor grape, which brings \$1.75 to \$2.00 a half-crate at wholesale; Cornichons are still plentiful, and this sort, if quite ripe and sound when picked, has excellent keeping qualities. Five-pound baskets of Delaware grapes, from New York state, may still be had at twenty-five cents, Catawbas, and the last Niagaras, at twenty cents, Concords being five cents less. Large sales of Almeria grapes yesterday realized prices double those of last year, and with only one more cargo of 3,300 barrels to arrive, these sales will be ended for this year. Only about forty per cent. of the amount of last year's importations—some 250,000 barrels—have been sold here this year. An average price at recent sales has been \$7 a barrel of fifty pounds, while the extreme price of \$16 was obtained for some fancy lots within the past week. Showy Gros Colman grapes, from English hothouses, cost \$1.75 a pound. Bilyeu peaches, from California, in fairly good form, may still be had for seventy-five cents a dozen; and quinces, from the same state, are not uncommon in the wholesale markets. Silver prunes and Coe's Late Red plums, in good condition, can yet be bought for seventy-five cents for a box containing about five dozen fruits. Florida oranges of fair color are now here, although most of them are still immature and lack sweetness. They are good enough, however, to crowd out and depress the prices of the late supplies of Jamaica oranges. Good Navel oranges are selling at seventy-five cents to \$1.00 a dozen, while Tangerines and Mandarins command thirty-five cents a dozen, and grape-fruit of good quality can be had for \$1.25 a dozen. Six-quart baskets of crab-apples are offered at thirty-five cents. Lady apples sell at twenty-five cents a quart, and choice selected barrels of this table apple have recently sold for as much as \$20.00, ordinary grades in half-barrels bringing \$4.00. Perhaps the showiest apple offered now is the King, the best of which are retailed at fifty cents a dozen.

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A Lesson in Forestry.

MR. FERNOW'S Report of the Division of Forestry of the Department of Agriculture for last year, which has been published in pamphlet form, makes seventy pages of instructive matter for American readers who wish to form intelligent opinions on questions relating to forestry in this country. Mr. Fernow's account of the varied work of the Division during the year, together with the statistics of the consumption and supply of forest-products in the United States, with the lessons drawn from them, are all interesting, but we wish specially to call attention to the section which describes the forest exhibit of the German Government, which was installed in the Forestry Building at the Chicago Fair. The usefulness of this collection, as we glean from its description, and as we remember the exhibit itself, was not primarily to illustrate the degree of perfection to which forestry as a science and an art had reached in that country. Its chief value was rather to familiarize the people who saw it and the people who will read this description of it, with the fact that there is such a science and such an art, and that if our forests are ever to occupy their appropriate place in the economy of the nation they must be managed on some system which is based on experimental knowledge of the kind which has been gained in Germany.

It is often said that European forestry methods can never be adopted here, because (1) the spirit of personal independence fostered by our institutions would never tolerate such assumptions by any central power as are common in Germany; and (2) because our climate and soil are so different, and the trees we grow here vary so much in habit from those of the Old World that German experience would be of no benefit. There is some truth in both these statements, but, after all, the popular idea of the amount of control exercised by the various governments in Europe over the wooded parts of the country is an exaggerated one, and it is also true that whenever the American people fully realize the need of some comprehensive system of forest-management they will take practical steps toward the inauguration of such a system without any fear of surrendering their liberties. In the second place, it is perfectly true that our profitable forests

will consist of species different from those which make up European forests, and those forests will be subject to different conditions of soil and climate, but the general laws of plant-growth are the same on every continent, and it is absurd to say that we cannot profit by what has been learned in other countries. Sir Dietrich Brandis established a successful system of forestry in British India, because he had learned the reasons why it was necessary to mingle trees of different habits and requirements in regard to light and shade. He had no experience in planting Teak and Bamboo in Germany, but he used them as he had used trees which answered a similar purpose at home. Of course, we must acquire an experimental knowledge of the habits of our native timber-trees, so that we can give intelligent reasons for planting a given species in a given place and in given company. But, after all, our knowledge of our native trees will be valuable, because it will enable us to know what place they are to fill in a system of forestry based on principles which have been already established as sound in practice.

But, as we said at the outset, the value of this exhibition was not primarily to show us a model to be copied in practice here, but to show how much study and investigation it has cost to establish the principles and elaborate the plans upon which the best practice rests, and how thorough must be the preparation and equipment for carrying on the work with intelligence and accuracy in every detail. How the survey of each forest-district is carried out to its minutiae is seen not only in the compartment maps in which the district is parceled out, but in relief models and contour maps, and even in such refinements as soil-maps, which indicate in colors the kinds of surface soil in the different compartments of the forest, with their quality and depth, together with the character of the subsoil, the distance to ground-water and other details. Since a second forest-crop is to be produced as soon as one forest-crop is harvested, the natural forces and conditions of thrifty forest-growth must be husbanded and the manager must have an intimate knowledge of the actual conditions of the forest at any given time, so that, in addition to the maps we have already spoken of, there are others which give a complete description of the various forests, of their condition, and the proposed manner of using and reproducing them—maps showing at a glance not only the quality of the soil, etc., but showing the kinds of timbers and their admixture in each compartment; how old the trees are, how they have been treated, at what period they are to be cut, and much besides.

All this occupies but a few paragraphs in a chapter which contains a great deal more of equal interest in regard to the valuation of the growing timber, calculating the forest yield, and determining the methods of harvesting and transportation, besides condensed descriptions of the practice of regenerating the forest, of underplanting and thinning, with an appendix on Forest-education and Forest-literature. The lesson of it all is, that while our state and national governments allow the public forests to be preyed upon by timber thieves and burned up by incendiaries, and while the owners of private woodlands are making no provision for future supplies, there are countries in the world where it has been proved that an enlightened forest policy will insure a continually increasing supply of forest-products. We cannot expect at once to organize a system of equal efficiency, but we can, at least, begin to feel that there are better ways of managing our forest-property than our own plan of cutting more timber every year than the forests produce, and of recklessly removing the tree-cover from the sources of our great streams without a single thought of what will be its effect upon their flow. It seems almost impossible for any thoughtful man to read this illustrative sketch of German forest-methods without concluding that since some system of forest-management must in the end be carefully wrought out, the sooner we begin to lay a broad-set foundation for it the better. And inasmuch as the system must ultimately be

based on knowledge and experience, the sooner we begin to instruct young men in the elements of silviculture the better. Beyond question it is high time that the experiment stations realized that from the very nature of their position much responsibility rests upon them, and that they should take hold of the work at once with some vigor and determination.

THE autumn colors have almost disappeared from our forests and thickets in this latitude, but there are persistent leaves still glowing here and there to remind us of their past splendor. The brilliancy of the foliage at this season is one of the spectacles of the year of which one never tires, and when trees are to be selected for parks and roadsides, and even for private places, it is surprising that their appearance at this season is not more carefully considered. It is always our purpose in describing trees or shrubs to explain their value for all seasons of the year, and we are glad to observe that there is a growing demand for shrubs with ornamental berries, which add another touch of color to the landscape at this season. Our native Hollies and Winter Berries, with their bright scarlet fruit, the Thorns and Crab-apples, many of the Barberries, Viburnums, Cornels, Honeysuckles and Roses, our climbing Bitter-sweet and its Asiatic congener, *Celastrus articulata*; *Symplocos cratægioides*, which as yet has no common name, but which is notable for its ultramarine-blue fruit—all these and many more are growing in popular favor, and are more often seen in planting lists. We doubt, however, whether much consideration is given to autumn color when trees are selected for planting. Our Oaks and Maples, our Tupelo and Liquidambar and Sassafras, with smaller trees, like the Sorrel and Dogwoods, are beautiful at any season, but they are magnificent when in full October color. Many shrubs, both native and foreign, are quite as brilliant as the larger trees. Our Yellow Root, with its scarlet and orange; our high Blueberries and some other *Vacciniums*; the *Leucothoës*, Sumachs and Viburnums and *Rhododendron Vaseyi*, and some of the Asiatic *Spiræas*, with many others, are all clothed in autumn foliage, which is beautiful beyond description. But, although certain species and varieties are invariably beautiful, there are individuals of these classes which excel the rest. Every one can recall some Sugar Maple-tree, for example, which turns to more gorgeous colors than any of its neighbors; and in the first volume of this journal we suggested the propriety of propagating from trees of this character, so as to secure this particular quality. In scores of instances nurserymen have perpetuated some individual trait like the form or foliage in different Maples, Locusts, Oaks and other trees, as the long list in every catalogue will show. Why would it not be wise for nurserymen to select for propagating plants whose leaves have exceptionally pure color in autumn? It would seem that there ought to be a place somewhere for shrubs and trees which could be commended for their singular beauty at this season.

Accumulation without Disposition.

ONE of the dangerous tendencies of modern gardens is to sacrifice beauty of effect to the multiplication of specimens. In these days when so many new and interesting varieties of shrubs and trees are constantly being introduced, the enthusiastic lover of a garden naturally wishes to try everything, and so he plants each novelty without considering whether it will harmonize with his previous arrangement. There are many apparent justifications of this habit. One failure is that very few genuine garden lovers are able to construct their places from the beginning or to have any clear conception of how far this passion, which grows by what it feeds on, is likely to conduct them. Most people furnish their grounds as they do their libraries—one plant and one book at a time. The book may be in several volumes, and the shrubs may come by the dozen, but the purchase comes from the want of the moment, not from a foreseen plan, and is based on novelty.

Even if a man's grounds have been laid out for him by a skillful landscape-gardener, the introduction of a fascinating novelty is too much for his artistic virtue. Have it he must, and a place must be found for it somewhere. The consequence is that small country places and large grounds soon become overstocked, not only to the detriment of the effect, but also to that of the plants and trees themselves, which suffer from crowding. If, even when let alone, the tendency of a growing picture is to spoil itself, how much the more must it suffer by the interpolation of passages never allowed for in the original design!

In places of more pretension one sees the same tendency to overload, to stick things in—to sacrifice harmony to opulence, simplicity to the love of accumulation. If an Umbrella Pine or a Cedar of Lebanon is a rare and expensive tree, it must be had, and planted in a conspicuous situation that every one may see it, without any reference to the fact that neither of these important trees can be set out without the risk of their striking a false note, and swearing at the rest of the composition, and it is the same with shrubs and flowers. Yet one of the principles urged in the earliest and best works upon landscape-gardening is that selection is far more important than variety, and that a better effect can always be produced by masses of one kind of tree than by clumps composed of many different trees. Uvedale Price, in his essays on the picturesque, deprecates the practice of mixing many sorts to produce variety, and adds:

Variety, of which the true end is to relieve the eye, not to perplex it, does not consist in the diversity of separate objects, but in the diversity of their effects when combined together, so as to form a difference of composition and character. Many think, however, that they have obtained that grand object when they have exhibited in one body all the hard names of the Linnaean system; but when as many plants as can be well got together are exhibited in every shrubbery or in every plantation, the result is a sameness of a different kind, but not less truly a sameness than would arise from there being no diversity at all; for there is no having variety of character without a certain distinctness, without certain marked features on which the eye can dwell.

The trouble with places in which accumulation is the guiding spirit, is that there is a weariness of detail about them; one is more occupied with the specimens than with the picture; in short, the porch is bigger than the temple. This is a crying error whether it occur in park or garden. The larger and more united the landscape effect, the simpler must be its component parts. In Repton's *Inquiry into Changes of Taste* he says, "There is more variety in passing from a grove of Oaks to a grove of Firs than in passing through a wood composed of a hundred different species." There are places of charming possibilities which leave no more consecutive effect upon the mind than the study of a botanical dictionary. The only memory which survives after a day's walk through such a museum is that of two or three interesting specimens. Of course, a man has a right to make a museum of his place if he desires, and in that case his collection will have its highest value when it is instructively classified. It will fail of its purpose as a museum if the plants are confusedly scattered about wherever the gardener could find a hole for each one in some unoccupied corner.

This fault is the same one we deprecate in materialistic painting, where the artist occupies himself with each leaf upon the tree, or each stone upon a sea-beach, rather than with the great harmonious sweep of foliage, or the shock of the ever-changing wave as it strikes the sands. It takes courage to sacrifice a specimen to a picture, the specimen is so enticing, so novel, so altogether the best of its kind; its blossom is unrivaled, its fruit a marvel, its growth unparalleled, we must have it to show.

Thus, in humble gardens, we find a giant Magnolia cultivated in a garden-patch, a new Hollyhock looming in a Mignonette bed, a Japanese Cypress tucked away under an Oak, and a row of Spruces struggling in an Apple orchard. Our parks are not free from this vice of confusion. There

seems a perfect mania for collections of *Retinisporas* under deciduous trees, where they look badly and cannot grow; for the interpolation of evergreens of all sorts in the most unlikely and unbecoming places, simply that when the trees above them have lost their leaves there may be something green left to look at. The result of this disposition is every way disastrous. But, never mind, we have accumulated specimens!

So the habit spreads, and imagination gives place to the catalogue of novelties, the river-view is obstructed by a group of *Cercidiphyllums*, the sweet calm stretch of meadow in the distance is hidden by a bed of flaming *Azaleas*, magnificent it is true, but in the way. *Rhododendrons* especially seem to get put in the wrong places, where their shining dark leaves conflict with the softer tints of the surrounding shrubbery, and their dense masses shut out everything else. This is the age of detail, of specialties, of curiosities and accumulations, and few, indeed, are the authorities who can show people what to do with them. Left to themselves the planters run riot, and shrubberies are turned into collections of bibelots and curios, and the timber-belts are tedious from their very variety.

Not thus does Nature disseminate her plants, but the cions cluster about the parent and her changes are gradual and harmonious. From group to group she passes with tender gradations of size and color. Above all things, whether in the animal or vegetable kingdoms, she is indifferent to eccentricity, and loves to enforce the type. This great principle of mass—of generalization, as opposed to the individual—is the most marked characteristic of natural development. Therefore, let the collector of specimens harmonize his groups above all things, whereby the individuals will gain rather than lose in value, by acquiring true significance in relation to corresponding though different types.

Hingham, Mass.

M. C. R.

Foreign Correspondence.

London Letter.

CHRYSANTHEMUMS are now the principal topic here with horticulturists and the horticultural journals. They are a prominent feature at all exhibitions held during November; indeed, many small towns in England are unable to hold an exhibition or show unless it be of Chrysanthemums. London has had two great exhibitions of these plants within a week—at the Crystal Palace on the 2d and 3d, and at the Aquarium on the 6th, 7th and 8th of the month. It was a matter of general surprise among growers to find such excellent examples of flowers, particularly of the Japanese kinds, after the unfavorable season we have had. True, the weather had affected the incurved varieties, which lacked size, substance and color, compared with the flowers of last year, for instance; there was also a marked falling off in the specimen plants. But I have never seen such well-flowered trained specimens as the six plants which won first prize at the Aquarium for Mr. D. Donald, of Leyton. They were each about eight feet over, and averaged two hundred good blooms to a plant. As examples of exceptional skill in cultivation, they were a feature of the exhibition, but in a picturesque sense they were excessively ugly. One rarely sees a naturally grown plant of Chrysanthemum at an English exhibition, and in view of the fact that the Chrysanthemum under ordinary treatment forms a most attractive bush, this is remarkable. If a group of untrained plants in flower is shown it is invariably made up of plants carrying three or four large flowers, each supported on stiffly staked stems. It seems to be the misfortune of the organizers of exhibitions that they must make everything subservient to the trays of big blooms, which certainly are marvelous to look at, but which are deprived of most of their picturesqueness by trussing them on trays. An exhibition in which all the plants should be natural, and in which the number of flowers borne by each plant would count in the points, would

be a much greater attraction to laymen, as well as to growers, than the present shows are. The same may be said of the cut flowers. A feature of the National Chrysanthemum Society's great annual exhibition, in recent years, has been the classes for the arrangement of Chrysanthemum-flowers for decorative effect. This year this part of the exhibition was by far the most attractive. The flowers had long, leafy stems, and they were arranged loosely and artistically in ornamental vases. Such accessories as the colored leaves of *Ampelopsis*, various Oaks, the feathery sprays of *Asparagus*, Ferns, the leaves of *Crotons*, etc., were permitted. The effect was, in most cases, magnificent, an object-lesson of the greatest value, showing as it did the decorative qualities of the Chrysanthemum in a way that neither the trussed blooms on the trays nor the painfully trained specimen plants, nor the stiff-legged plants in the groups could even suggest.

The most successful arrangement of this character was set up by Mr. H. J. Jones, of Lewisham, whose vases and epergnes were large, yet elegant, and they were filled with Chrysanthemums, mostly Japanese, grand flowers too, whose beauty came out amidst the setting of feathery Fern and colored leaf.

In England, the Japanese varieties are now first, and the rest nowhere. They are a long way ahead of all the other classes in point of elegance, color and variety. Take a handful of the flowers of the pick of the Incurved, the Queen of England group, say, and compare them with such Japanese sorts as *E. Molyneux*, *Stanstead White*, *Sunflower*, *Colonel W. B. Smith* and *Florence Davis*. Ladies do not care for the incurved varieties, and cannot be persuaded to take any but the Japanese for floral decorations. The Anemone-flowered varieties, the Pompons and the Reflexed are worth growing, but the Japanese sorts now eclipse them all. There is, however, one section of Chrysanthemums which has a promising future, and that is what is called the single-flowered section. They are never prominent in exhibitions, but gardeners, who know their value in the conservatory and for cut-flower purposes, grow them in quantity. There is no more beautiful variety than *Mary Anderson*, which is a glorified moon-eyed Daisy.

English growers and breeders of Chrysanthemums are largely on the increase. Mr. Godfrey, of Exmouth, the raiser of the beautiful *Florence Davis*, *Beauty of Exmouth* and other first-rate sorts, has this year some seven thousand seedlings on trial, and he is only one of dozens who are working on an equally large scale. Seedlings of promise are submitted to the societies for certificate, and it has now been decided to exclude from the official catalogue of cultivated Chrysanthemums, published by the National Society, all new-named sorts that fail to obtain this certificate. By the way, I can recommend this catalogue to American growers of Chrysanthemums. It contains a classified descriptive list of all the sorts grown in 1890, with two supplements, bringing it down to the present time, besides other interesting and useful information. It is published at the price of one shilling, and may be obtained from Mr. R. Dean, the Secretary of the National Chrysanthemum Society, Ranelagh Road, Ealing.

Some idea of the magnitude of the exhibition and the keenness of the competition may be gathered from the number of competitors in each class. Thus, for the prizes for forty-eight Japanese blooms, there were eleven competitors; five societies competed for the National Challenge Trophy; there were seventeen stands of one dozen distinct incurved varieties, twelve of two dozen Japanese, fifteen of one dozen Japanese, and so on. The exhibitors hailed from all parts of the country, chief honors being won by Mr. Lees, gardener to F. A. Bevan, Esq., Barnet; Mr. Mease, gardener to A. Tate, Esq., Leatherhead; Mr. Donald and Mr. H. J. Jones, of Lewisham. There are separate classes for amateurs and professionals (private gardeners) as well as for nurserymen. The latter, however, exhibit only elaborate floral arrangements or groups of plants not for competition. Some nurserymen show what they call

only ordinary flowers of good sorts, so that ordinary growers may see what their efforts are likely to result in. Twenty-one new varieties received certificates, eleven of them Japanese, three Incurved, four Anemone, two Reflexed and one Pompon. The pick of them were Duchess of Wellington, with long, curling, golden yellow florets; Monsieur Pankoucke, also golden yellow, the florets long and narrow; Miss Maggie Blenkivon, a large, full, yellow and bronze Japanese; Globe d'Or, a large full-flowered Incurved with broad golden yellow, bronze-tipped, florets; Niveus, of American origin, a pure white, large, full-flowered variety of the Japanese section. Two distinct and promising new Anemone-flowered varieties, named Caledonia, white, with a mauve-tinged centre, and Owen's Perfection, yellow and lilac, deservedly obtained certificates.

In addition to Chrysanthemums, there were numerous exhibits of fruit, the grapes being particularly good, and vegetables. There were also mixed groups of plants, including Orchids, from several of the leading London nurserymen.

MR. CANNELL'S PELARGONIUMS.—I have had occasion to speak of these several times in recent years, but they are as delightful to look upon again as is the return of spring. The exhibit this year consisted of a long bank formed of Ferns and Violets, and set all over with enormous bouquets of Pelargonium-flowers of wonderful color, size, substance and variety. No one has ever attempted to rival Mr. Cannell as a grower and exhibitor of Zonal Pelargoniums in winter. The Aquarium show would be deprived of one of its principal attractions if Mr. Cannell's flowers were not there. The Zonal Pelargonium has come to be looked down upon by some as vulgar and commonplace, but I question if there is anything in the whole range of garden exotics which has the same all-round value as the race of the Scarlet Geranium. It is impossible for any one to look upon the glories of Mr. Cannell's collection of these plants when at their best in winter and not grow enthusiastic over their great beauty and usefulness.

London.

W. Watson.

Plant Notes.

The Wax Myrtles of the Sea-coast of Eastern North America.

AS early as 1691 Plukenet published in his *Phytographia* a very good figure of the common Myrica or Wax Myrtle of the south Atlantic and Gulf coasts of North America; Catesby, in the *Natural History of Carolina*, which appeared in 1731, also published an excellent figure of this plant, together with an indifferent figure of what he considered a second species which he distinguished by its broader leaves and humbler stature. Of the first of these plants, Linnæus made his Myrica cerifera, and of the second the variety β . of that species, extending its range into Pennsylvania. Miller, in the eighth edition of *The Gardeners' Dictionary*, was the next author after Linnæus who described these plants, making of Catesby's shrubby species his Myrica Carolinensis. Walter recognized varieties on the Carolina coast with subserrate and entire leaves. Michaux also united Catesby's two plants specifically, calling Plukenet's plant variety arborescens, and giving its range from Carolina to Florida, and calling Linnæus's variety β . var. media, with a range from New England to Florida, and making a variety pumila, ranging also from Carolina to Florida. Pursh followed Miller, adopting, however, Michaux's variety pumila, and also the Myrica Pennsylvanica established by Lamarck, which, judging by the beautiful figure in the *Nouveau Duhamel*, is only the common Wax Myrtle of the northern states. Elliott adopted Miller's view, although he included the variety pumila of Michaux in his Myrica Carolinensis, while Chapman has followed Michaux. The botanists, including Bigelow, Torrey, Gray and Britton, who have written specially of the plants of the northern states, have referred the common coast Myrica to the Myrica cerifera of Linnæus without

even a question of its being a variety of that species. When the plants are seen growing, however, it is impossible to adopt this view, or admit that the northern and southern plants are varieties of one species; and in describing the trees of this genus for *The Silva of North America* I shall follow Catesby, Miller and Elliott, and call the southern arborescent plant Myrica cerifera, and the northern shrubby plant, which also ranges far to the south, Myrica Carolinensis.

Myrica cerifera (see page 476) is a tree sometimes forty feet in height, with a tall stem covered with pale smooth bark, and sometimes only a few inches thick, although occasionally more than a foot in diameter, and a narrow head of slender upright branches, which are usually forked toward the extremities. The leaves, which remain on the branches until after the appearance of those of the following year, are lanceolate-obovate, often entire or furnished at the apex with a few coarse or minute teeth, glabrous, two and a half to three inches in length, usually from a quarter to a half of an inch in width, although occasionally nearly two-thirds of an inch wide, and covered with bright golden resinous glands, which are so thick and conspicuous on the young foliage that it appears bright yellow. The leaves have a strong resinous odor, quite unlike the peculiar odor of the northern plant. The fruit is about one-sixteenth of an inch in diameter and pale blue.

Myrica cerifera grows in low wet holes in the maritime Pine belt and in deep swamps near the coast under the shade of Red Maples, Cotton Gums, Sweet Gums and Bay-trees; and where roads or openings have been made through them this tree may often be seen bending down along the margin of the forest, its long slender stem being unable to hold the head erect unless surrounded by other trees. I have found it near Cape Charles, in Virginia; it is very common on the coast and islands of the south Atlantic states from Cape Fear River south to the Florida keys and on the Gulf coast as far west, at least, as Berwick Bay, and probably farther, although I do not remember to have seen it on the Texas coast; it is said to grow on several of the Antilles, and I have collected it in Bermuda, where it is abundant. There is a form of this species (the variety pumila of Michaux) which grows in the sandy Pine-barrens of the south Atlantic and Gulf coast-region, usually in rather low, slightly moist, places not far from the margins of swamps, which is often only a foot high, but otherwise is not distinguishable from the arborescent form except in its narrower, smaller leaves and rather smaller fruit.

Myrica Carolinensis (see page 477) is a low shrub which often forms broad dense thickets, rarely six to eight feet high, and usually not more than two or three feet high. The leaves are broadly obovate, coarsely serrate above the middle with a few large teeth, or entire or nearly so, slightly pubescent on the lower surface, hirsute on the mid-ribs, two and a half to three and a half inches long and three-quarters of an inch to an inch and a half wide. The resinous glands are smaller than those on the leaves of Myrica cerifera, and never abundant enough to give the foliage the yellow color which is so marked in that species. The fruit is rather more than an eighth of an inch in diameter, or more than twice as large as that of Myrica cerifera, and rather paler, although the color of the fruit of both these plants varies considerably on different individuals.

Myrica Carolinensis is common on the shores of the Great Lakes and near the ocean from southern Maine to southern New Jersey, and at the north inhabits dry hill and sandy shore-dunes; south of New Jersey it is rare, although I have seen occasional isolated plants near Wilmington, North Carolina, at Bluffton, South Carolina, and near Mobile, growing in swamps with Myrica cerifera; and Dr. Chapman and Mr. Curtiss have collected it at Apalachicola, Florida.

Information on the distribution of these two plants on the Gulf coast west of Mobile Bay and of the northern range of Myrica cerifera, which may be expected to reach

the southern peninsula of Delaware, and possibly southern New Jersey, is still much needed, and these notes are written in the hope that botanists will communicate with me the results of their observations upon them, especially in regard to their distribution.

More information on the distribution of *Myrica inodora*, too, is needed. This is a beautiful little tree with pale bark, thick obovate entire dark green and very lustrous persistent leaves, and fruit sometimes nearly a quarter of an inch in diameter. It was discovered by William Bartram in a swamp near Mobile, where it still grows, as well as in one or two others in the same region; it has been found near Apalachicola, and is comparatively common on the Indian River, in Florida, but, although first described more than a century ago, it is still one of the least-known of American trees. Information about its range northward in Florida and westward from Mobile Bay, as well as better specimens of the flowers than can now be found in herbaria, are needed. C. S. S.

ACER PALMATUM.—This is one of the most common of the Maples cultivated in Japan, and it was introduced into this country something like thirty years ago by Mr. Thomas Hogg. It is an exceedingly variable species, ranging in habit from a low, trailing shrub to a tree of something like fifty feet tall in its native country. The shape of the leaves shows quite as wide variation, and their peculiarities of cutting and color have been preserved by nurserymen, so that a great number of forms with Latin names are to be found in commerce. Of all these forms the normal type is much the best, and it makes a neat round-headed tree of the second size. The best specimens we know, and, perhaps, the earliest ones sent to this country, are to be found in Prospect Park, Brooklyn. There are three trees there which are probably thirty feet in height, and although two of them have been badly crowded, they are still fairly well-formed and beautiful specimens. One of their peculiar merits is exhibited at this season of the year, since, like many other Japanese plants, they retain their leaves in autumn long after our native species of the same genus are entirely bare of foliage. No doubt, this is due to the fact that the autumn in eastern Asia is fully a month later than it is in this country. The leaves of these Japanese Maples turn to a very brilliant color before they fall, and it is always a surprise to come upon this intensely scarlet foliage in late November. This peculiarity alone makes them valuable for ornamental planting. They are particularly useful on the edges of a wood border, where, of course, they cannot make perfect trees, but their foliage forms a fine forest-edging all the season through, and just now in such places it is exceptionally beautiful. These trees have shown a disagreeable habit in this country of dying back in the summer without any apparent reason, but this may be due to the fact that the plants brought here have been propagated from worn-out nursery-stock, and, perhaps, trees from seed gathered in Japanese forests would be more thrifty and long-lived.

ROSA SINICA (LÆVIGATA).—The Cherokee Rose is getting better known, now that so many people make the south a winter resort, and travelers bring back pleasant reminiscences of its great prodigality of growth and bloom. Although a native of China, it is so well established in the Carolinas, Georgia and Florida, it is hard to believe that it is an introduced species. It is not hardy at the north, nor is it easy to grow in pots, but if given a good border, or even a bench, in a cool greenhouse, it will thrive without much care and give an abundance of its beautiful single white flowers from January to March. It should be planted in full sunlight and trained to the rafters or wall, in good, rich and well-drained soil, and, most important of all, it should have a close cutting back, much the same pruning one would give a Grape-vine, in September or early in October. A young plant from a six-inch pot set in the border in June will make sufficient growth to flower the following January;

the first season the severe pruning should be omitted, but never afterward. When the plants have been established for several years some old wood should be cut out annually in March or April to encourage the growth of new shoots. Plenty of food should be given when it is growing best. The propagation is by hard-wood cuttings in October. We have often commended this Rose, but it is a plant which it is difficult to overpraise.

POLYGONATUM MULTIFLORUM.—The common Solomon's Seal is a native of northern Europe, perfectly hardy here and well adapted to any soil and situation. It is difficult to explain why such a good plant, and one of such easy cultivation, is so rarely found in our gardens or offered in catalogues of commercial plants. When seen it is generally in old gardens, where it seems almost a relic of the past. The stems grow two or three feet high, making a graceful curve; they are clothed with leaves of good size and color, in the axils of which the white flowers are borne in June, in clusters of from two to five, each blossom being about three-quarters of an inch in length. It is good for massing with other strong-growing herbaceous plants and makes an excellent background for the smaller kinds. The plant is not only valuable for garden use, but is very decorative when cut and brought into the house, two or three sprays making a beautiful bouquet. It forces easily. A number of plants exhibited at the spring show of the Massachusetts Horticultural Society, two years ago, attracted much attention. The propagation is by division, good plants being obtainable in a short time.

LILIUM BULBIFERUM, var. UMBELLATUM.—The type is a native of the Tyrol and mountains of central Europe, having a rather limited range; as the name implies, bulblets appear in the axils of the leaves. In this plant, the *L. umbellatum* of the nurserymen's lists, these bulblets are wanting, hence this variety is often referred to *L. Dauricum* or some other Asiatic species. This plant is a strong grower, perfectly hardy, and thrives in any deep rich soil where the drainage is fairly good. Although it does much better in the sun, it will succeed in shade, even on the north side of a house or high fence; its time of blooming, however, is thereby much retarded. It is as easily grown as the Tiger Lily, a somewhat unusual merit in this family; and when once established, the growth and increase is so rapid that replanting is required at frequent intervals. The stems are from two to three feet high, crowned in June with an umbel of from four to six bright orange-red flowers of good size and texture; the foliage is a good deep green, retained well into the summer. Altogether it is a good plant, particularly where opportunity is given for large masses. Many varieties are offered very cheaply by the Dutch growers, but they are all much alike.

Cultural Department.

Lily-of-the-valley for Outdoor Planting.

A WELL-GROWN lot of Lily-of-the-valley is seldom seen out-of-doors, and when these plants have any place at all in the garden they are usually relegated to some out-of-the-way corner, where the roots of shrubs and trees appropriate the nutrition they need, so that there is only a meagre exhibit of flowers in May, when there ought to be an abundance of strong spikes. For some reason there seems to be a prevalent idea that imported German forcing-crowns are not hardy in the open border in this section of the eastern states. This mistaken notion is due to the fact that they are generally used in greenhouses, but no more suitable crowns could be obtained for outdoor planting than these specially prepared German crowns if they can be had early enough in the fall to be planted in the beds prepared for them. The situation of the bed is, perhaps, the most important point for insuring success; fully exposed, hot, dry situations are to be avoided, or failure is sure to follow. The beds should have a position where they are shaded through the heat of the day by overhanging trees or a building, or even a fence is sufficient to break the force of the midday sun in the heat of midsummer. There are few gardens that do not afford such positions, and the difficulty often is to know what to plant in just such places where grass refuses

to grow, and many of the shade-loving plants become weedy and possibly difficult to eradicate when once established. If suited as to soil and situation the crowns need to be lifted every third year, and to be replanted over a larger space; otherwise the crowns do not develop fully, and the flowers are small. If it is not desirable to cover more than the original space the crowns can be used for forcing in winter, and will be found to give good results. The roots can be preserved

manure to protect the newly made beds from severe frost. The older beds we cover annually with a good coat of finely chopped manure as a fertilizer for the coming year. This is allowed to remain on the bed, and it is surprising to see the vigor of the foliage that pushes up through it in the spring, the blades broader than the palm of one's hand, with spikes of bloom in proportion, many with more than twelve bells to the spike. The chief danger to guard against is drought in sum-



Fig. 75.—*Myrica cerifera*.—See page 474.

without mutilation, and mats of them can be used which will give a better spike of bloom and more foliage than is usually obtained from newly imported crowns.

The situation being decided upon, the soil should be dug out to a depth of one foot, and plenty of manure mixed with it, or if it is poor a better soil should be substituted. The bed should be filled in to the depth of six inches, and the crowns set about six inches apart each way, the roots being carefully laid out, since they do not penetrate deeply, but spread. After filling in the rest of the soil it is well to give a top-dressing of

mer; with moisture the Lily-of-the-valley will thrive in sand if well enriched.

We are hearing a good deal now about the new Russian form of Lily-of-the-valley, and this strain is being tried on a large scale this year for forcing under glass. Whether it is a distinct form or whether it is obtained by extra cultivation is at present uncertain, but the introducers claim that these crowns are grown at the foot of the Hartz Mountains, and are altogether superior to the general stock in cultivation.

South Lancaster, Mass.

E. O. Orpet.

Achimenes.—I.

EXCEPT the Gloxinias, so-called, the genus *Achimenes* is the only one of the rich order of Gesneraceæ that is much cultivated. The *Isolomas*, *Tydæas*, *Nægeliæ* and others are very ornamental, some for their flowers, some for their foliage, and some for both, yet they are almost unknown in our gardens. The beautiful figures of these plants in the *Flore des Serres* have, seemingly, produced little effect in the way of extending their cultivation. Not that any are

they advance to straight, outward-inclining sticks, and so treated they make, it must be confessed, very striking objects, with their scarlet, purple or white flowers springing abundantly from every axil, each flower presenting its full face to the spectator; yet I much prefer a simpler mode of cultivation, that is, a wholly natural growth without stakes of any kind. Some have sufficiently strong stems to stand erect, others stream gracefully over the edges of the pots. I have seldom seen a more pleasing array in a greenhouse than a long shelf completely filled with pots of the fine sort called



Fig. 76.—*Myrica Carolinensis*.—See page 474.

more beautiful than the *Achimenes*, but they are different; and variety is one source of pleasure.

Achimenes are natives of the tropical regions of the New World, being found in moist and rich soils, from Mexico to Brazil. Their habit of growth is to spread by underground extensions, and it was a remark of Colonel Wilder's that they must be a terrible pest in cultivated grounds, where they are hardy, just as *Oxalis cernua*, introduced from the Cape of Good Hope, has become in Malta. No more showy plants can be found for greenhouse decoration from May to October, and for window-boxes in the summer they are unsurpassed. They are commonly grown in a rather stiff manner, closely tied as

Masterpiece, all in full bloom, the flowers contrasting finely with the rich bronzy foliage. The manner of treatment which I have found satisfactory is as follows: About April 1st I pot the bulbs in ordinary garden-soil, with which a considerable quantity of leaf-mold has been mixed. They are covered about half an inch, regularly watered, and kept warm. The leaves appear above the surface in about three weeks, and, if not chilled or dried, grow rapidly and begin to bloom by the end of May. About the middle of October the flowering season is over and the pots should then be dried off. The bulbs may be separated from the earth in which they grew at any convenient time; those of the varieties of *longiflora* will be

found scattered through the soil, while the long and slender bulbs of the other kinds will be clustered at the base of the flower-stem. I usually put them into flower-pots, which I set upon the ground in the greenhouse, but care must be taken not to let them get too moist, lest they rot; they are not likely to get too dry in the winter.

There is no trouble about propagating *Achimenes*; most kinds, indeed, make an abundance of new bulbs in the pot during their growth, but all kinds may be multiplied by means of cuttings, which root very readily, and by rubbing the scales of the bulbs apart and sowing them as if they were seeds. I use the word bulb with reluctance, for their structure is not such as the general acceptance of the term would imply. They consist of small fleshy scales arranged along an axis like the seeds of the Birch. I do not name any varieties here, as I design comparing a large number in another paper.

Canton, Mass.

W. E. Endicott.

Preserving Celery in Winter.

THE unexpectedly heavy snowfall on November 6th, and cold weather succeeding the storm, caught a great many private and market gardeners napping, and a considerable proportion of the Celery grown in this section was ruined. Where well earthed up a heavy snowfall or sharp frost can do no appreciable damage. To preserve Celery in good condition during the winter season is no easy task, and many good practical men fail in the task. For one or two seasons we tried lifting the heads and planting them in cold frames or storing in cellars. When placed in cellars the Celery kept fairly well, but became tough, stringy and of very poor flavor, owing in large measure, no doubt, to the lack of moisture at the root. In frames we usually lost a large proportion of roots from rot. For the past year or two we have succeeded in keeping Celery in good condition until the end of March in the open ground. Our late crop we plant on ground which has a gentle decline and where the soil is rather light; the plants are well watered during the growing season, and earthings up are given as required on the advent of colder weather; when sharp frost occurs a coating of leaves is placed over the trench of sufficient thickness to exclude frost; a couple of boards fourteen inches in width are nailed together and laid over the tip of the rows to throw off the water on each side, and also prevent the leaves from blowing about. On fine mild days we lift these boards off, and air is admitted as much as possible to the plants. Celery lifted with good balls of earth and heeled into trenches will keep fairly well, protected in the same way, but not so well as those which have never been disturbed at the root.

Taunton, Mass.

W. N. Craig.

Forcing Vegetables.

ASPARAGUS.—A most suitable place for forcing Asparagus is a frame about four feet deep, with one four-inch hot-water pipe running around it. About two and a half feet of fresh stable litter should be put into the frame and firmly packed, with an inch or two of sand spread over it. This bed should be allowed to stand until the heat of the manure has declined to about seventy degrees, and not below sixty-five degrees, before the crowns are placed on it. For this work advantage should be taken of a day when the weather is mild, as the crowns are easily damaged by frost. Large crowns five or six years old are preferable to smaller ones for forcing. They may be placed rather closely together in the frame, but the distance apart must be regulated by their size. The roots should be spread evenly over the surface and covered with six inches of sand. Little water will be required as the steam from the manure affords considerable moisture, but if the bed should become dry it may be moistened with water of the same temperature as the soil in the frame. A little air may be admitted when the day is bright and warm to keep the temperature from rising above eighty degrees. When the points of the shoots begin to appear above the sand the crop is ready to cut. Where ground is plentiful a supply of forcing crowns can be kept up by sowing a little seed every year, having five or six successions, the oldest plants being forced for cuttings.

RHUBARB AND SEAKALE.—An easy and convenient method of forcing Rhubarb in the open ground is to place over the crowns a barrel with the bottom up; the bottom should be loosened so that it can be readily removed. Over and around the barrel manure should be heaped, making the pile large enough to insure its not losing its heat before the crop is fit to gather, which will be in about six weeks from the time of starting. The Rhubarb may be started any time after the old leaves have died down, but it forces more easily after it has

been subjected to a good sharp frost. The young stalks can readily be had about the holidays, and the supply can be kept up all winter by successional batches. After the crop is gathered the crowns must be protected until all danger of frost is past. As the spring opens up they will start to grow again, and although they come weak at first, they soon gather strength, and after a year's rest can be forced again. This same method works equally well with Seakale, the only difference being that it does not grow so tall; flower-pots may be used for the seakale instead of barrels, and a twelve-inch pot will cover a pretty large crown.

Tarrytown, N. Y.

William Scott.

Dendrobium Phalaenopsis.—Mr. Watson's note in GARDEN AND FOREST for October 31st, as to the home of this superb Orchid, is interesting, more especially since we were treated to such a fanciful story concerning its discovery in New Guinea. But is it not possible that the plant has been found by different collectors, both in that country and Timor Laut? Messrs. Veitch say distinctly enough in their Manual that the plant is indigenous to both islands, and, moreover, the flora of New Guinea is strongly influenced by that of the Indian Archipelago, of which Timor Laut is part. To the cultivator, however, this is not of much consequence, as the requirements of *Dendrobium Phalaenopsis* are now pretty well understood, and are easily ministered to in modern greenhouses, as it is the easiest to cultivate of all the Australian group to which it belongs. Long sprays have been in bloom here more than three weeks, and the first flowers that opened are not fading yet, though some of the spikes carry as many as twenty of them. The secret of its keeping qualities are, however, due to the fact that it has been kept in the warm house wherein it grew, and that has kept moisture off the flowers. We have found that if the plant, while in bloom, is removed to a cooler house the flowers soon decay, and the same result happens if they are dampened. The flowers are most useful for boutonnières, and a spray laid on *Asparagus tenuissimus* makes a rarely delicate combination. *Asparagus plumosus* is far too rigid to blend well with the blossoms.

South Lancaster, Mass.

E. O. Orpet.

Anemone Japonica, Whirlwind.—There are none too many forms of Japan Anemones that are distinct and worth growing. Both of the two best known are of garden origin, and these have superseded the original typical plant, which is dwarf, bearing a semi-double dull reddish crimson flower, not nearly as beautiful as the white-flowered variety or the one called *Anemone Japonica hybrida*, which is identical with the white form, except in the color of its flowers, which are pink. We have now another variety, quite new, pure white, and with an inner row of petals that give the flowers a semi-double appearance, and the effect is pleasing. I have observed a disposition to criticise the flower and doubt its usefulness, but I believe it will prove an acquisition as a garden-plant. Our plants thus far are small in habit, but this may be due to their age, and it may be outgrown. If Whirlwind attains to the stature of the white and pink forms it will be valuable. It is worth noting here that within the last year or two an Irish grower has succeeded in raising seedlings, and some of these are said to be very large and beautiful. If this is true, American dealers ought to lose no time in introducing them to American gardens.

Boston, Mass.

Plantsman.

Correspondence.

How Plants Behave in a Mild Autumn.

To the Editor of GARDEN AND FOREST:

Sir,—The unusually warm month of October has had some interesting results. It has exhibited the tendency in deciduous plants to become evergreen in a continually warm atmosphere; that is, to make the fall of the leaf a less regularly recurring, periodic crisis in the life of the plant.

I have in my yard, in Boston, among other shrubs, a Lilac, a Hawthorn, a Kerria and a Deutzia, all of which are, more or less, covered with leaves. They are shrunken, shriveled and discolored, but they still hang on, in spite of nearly a week of freezing weather and a heavy snowstorm. The leaf-stems of the Lilac are as fresh, green and pliant as in midsummer. The Kerria has leaves as fresh as in midsummer; the buds, which are in their axils, have burst, and the young leaves, which belong to next spring's growth, are protruding from them, green and vigorous. The persistent warm weather allowed the sap to continue to rise after the period of the ripening process had gone by; and this constant supply of nutriment gave to the

leaf-stems, in particular, a new lease of life, preventing the ordinary cessation of growth and consequent readiness to fall away from their attachment.

I notice in the Public Garden and on the mall in the Common that quite a number of shrubs and trees still retain their leaves to a certain extent, and it is always the latest growths which remain. Some of the English Elms look quite yellow, although they have been exposed to snowstorms and high winds. Many of the weeds growing in the waste lands around have had a November bloom. The *Enocheras* had their season of growth and went to seed; their spikes of open capsules became dead, woody matter long ago. But a few, lingering, half-dead little buds below them have sprouted under the warm sun, and little flowers, not a quarter as large as the summer ones, have made their appearance. Sweet Clovers have taken on a new growth, as vigorous as the earlier ones in summer. These are slight instances of life's changes, being the results of life's environment; faint beginnings of Nature's forces in the evolution of differing habits and forms in the vegetable world.

I have noticed, this season, the marked difference between the areas of coloration in plants which continue to grow as long as the temperature permits, not ceasing when a certain maximum amount of development has been reached, as in Maples and Lindens. The Japanese *Ampelopsis*, so common here, exhibits remarkable differences in the time and place of its changes. The young growths retain their brilliant green, while the leaves upon the old wood have assumed the rich reds of autumn. I watched one of our native creepers in Hingham this summer, the leaves of which, upon the last year's growth, went through all the gradation of change of color up to a brilliant scarlet and then fell away, long before any frost had appeared; while the smaller leaves, of this summer's growth, were still living, of a fresh, bright green.

These are evidences that a leaf ripens when it has gone through a certain term of individual existence and reached the last of its life changes. If the environment begins to change, then the life-history will not repeat itself; it will change also. Our scarlet *Ampelopsis*, acclimated under a tropical sun, might never blush at all nor drop its leaves at regularly recurring periods.

Boston.

S.

Plant Houses at Summit, New Jersey.

To the Editor of GARDEN AND FOREST:

Sir,—The close competition in business which characterizes our time has by no means left at one side the growers of market flowers, and it is interesting to visit places where the most advanced methods are adopted and only a few species of flowers grown to the highest state of development. This was the thought forcibly brought home to me on the occasion of a recent visit to the plant house of Mr. John N. May, of Summit, New Jersey, where I went primarily to inspect his *Chrysanthemums*. Mr. May's flower factory is devoted practically to Roses, Carnations and *Chrysanthemums*. The thirty-odd houses are mostly of the modern type, three-quarter span, facing south, and set in ranges on each side of two spacious packing-sheds. The newer houses are steam-heated, but hot-water circulation is also used in part of them. The most striking general feature of the place, besides the general air of cleanliness and tidiness, was the fact that there was not a solid bed in any of the houses. Everything is grown on shallow benches holding about three inches of earth. These benches are of varying heights, usually arranged so that the plants will have all the light possible without being too near the roof. Many of the *Chrysanthemums* had been cut just previous to my visit. One house was wholly cleared, and was now being planted with Carnations. On the 7th of October Mr. May began to cut Yellow Queen, Mrs. E. G. Hill (pink), Kate Brown (white).

A small span-roofed house was so filled with flowers that its roof showed almost an unbroken lining of color. This is not incredible when it is stated that the single-stemmed plants are grown only a foot apart each way, and these were almost invariably furnished with a bloom of exhibition size. They were rooted cuttings in July, at which time they were planted on the benches. I am constitutionally blind to rust, mildew and insects on my neighbors' plants, but in this case am sure that the foliage could not have been better or stems more perfectly covered to the ground. Any one who has grown *Chrysanthemums* out-of-doors knows that they will gather any mildew afloat, and that a cool rain is always a signal for loss of foliage. The protection of glass seems to obviate this trouble.

Of the flowers I thought Mr. May's *Minerva* a glorious one in size and form, and especially in its rich lemon-yellow color.

Among the numerous yellow kinds I think there is no other exactly of this shade. Mayflower was in first-rate character this year, but the Queen, Mr. May's white variety of the previous year, had been already cut, as had Daybreak, his new pink variety. The sample seen resembled in shade a La France Rose. Mr. May had several new wonders, but the only one I remember is the recently named Dean Hole, which is a fine white, but slightly flushed pink on outer petals at some stages. Among other kinds the silvery white *Niveus* was particularly good, and Eugene Dailledouze seems to be a good late yellow.

In the Carnation houses, besides the main plantings of standard varieties, Mr. May is getting up stocks of a few new kinds in which he has great confidence. One of these, Maud Dean, seems to possess all the qualities of a perfect Carnation, narrow glaucous foliage, neat and long stems sufficiently rigid to carry the large flowers without staking. The flower is full-petaled, light pink at first, flushed crimson at the base of the petals. This is lost later, and in perfection it is of a most delicate pink, lighter than Daybreak. The Dean Hole, a name which has lately been given to many kinds of garden flowers, is this time applied to a yellow Carnation, scarlet-flaked—a strong-growing plant—with broad leaves and large flower, on the Clove Carnation order. Lena Saling is a rosy Carnation of great size, which was seen only in cut state, where a test was being made to discover how long it would "stay awake." Next to a bursting calyx, the fault of going to sleep, or folding its petals, is a most grievous fault in a market Carnation. There appears to be no end to new florists' Carnations, but it seems to me that the florist who will furnish us two or three nice spikes of foliage with each flower will meet the want most seriously felt.

All the most fashionable Roses are grown here in great quantities. The new Mrs. J. Pierpont Morgan has already been noted in GARDEN AND FOREST as a most brilliant Rose under artificial light. Great use is made here in all the houses of galvanized wire. The general plan is to run wires from end to end of bench along each row of plants, with corresponding wires overhead. When necessary, vertical wires are attached to the horizontal ones. These vertical wires are sometimes thin ones, and in other cases rigid stakes, say an eighth of an inch in diameter. All perishable stakes have been discarded. If the absence of solid beds is the most striking feature of the place, I think the visitor must be really more impressed with the evident care and attention given to each branch of each plant among the thousands grown.

It would, perhaps, be impossible to find in any private place any such detailed care given to cultivation. Each plant among the thousands seems quite a duplicate of its neighbor, and is treated like a delicate little machine whose work it is to produce the most money. It is by no means machine work, however, to secure with any certainty a profitable crop of flowers, even under the best conditions. Druggists will always say that "business will be good with them as soon as the furnace fires are started," and, like humanity, plants become very tender and subject to vicissitudes as soon as they are exposed to artificial heat.

It is often said that there are no secrets in growing plants, but this is scarcely more than a half truth. After every detail has been given over and over again most frankly by the most experienced growers, there still remain secrets which nature only reveals to those who devote to their work a kind of talent which, in many cases, seems instinctive, rather than acquired.

Elizabeth, N. J.

J. N. Gerard.

Recent Publications.

Trees of Worcester, by Miss Arabella H. Tucker, a teacher in the Normal School at Worcester, Massachusetts, is a list of the trees, native and introduced, that grow in the streets and grounds of that city, with such directions for finding them that any student of trees in Worcester, with this useful volume at hand, will have no difficulty in locating its most remarkable and interesting specimens. Mention is made of 161 species, of which seventy are exotic, and thirty-five more, although indigenous to the United States, do not grow naturally in Worcester County. The people of Worcester appear to have early appreciated the value of shade-trees, for in 1783 the following ordinance was passed: "Whereas, a number of persons have manifested a disposition to set out trees for shade near the meeting-house and elsewhere about the town, and the town being desirous of encouraging such a measure, which will be beneficial as

well as ornamental, vote, that any person being an inhabitant of this town that shall injure or destroy such trees shall pay a fine not exceeding twenty shillings for every offense, for the use of the poor." Such books of local information as this one, which was inspired by and modeled on Mr. John Robinson's excellent *Trees of Salem*, can but increase the knowledge of trees and the affection and respect with which they are held in the community, and more of them ought to be written.

Notes.

Grape-vines laid down on the ground will endure the winter much more safely, even without any covering, than they will when exposed to the wind, as they are on a trellis. It is safer, however, in this climate to give them a light covering as freezing weather comes.

It is stated in a bulletin of the North Carolina Agricultural Station that green tomatoes can be satisfactorily ripened if they are gathered when a sharp frost is imminent, wrapped separately in paper, packed in boxes and stored in a place just warm enough to keep them secure from frost. If brought out a few at a time, as they are wanted, and placed in a warm place, they will ripen in a few days. Tomatoes of good quality have been ripened in this way as late as the middle of January.

A correspondent of the *New England Farmer* writes that parchment paper can be used with good effect in a small garden as mulch. Brown paper, dipped in sulphuric acid and made tough and water-proof, is used for this purpose, and it is said in time of drought to have proved effective in checking evaporation and keeping down weeds. Experiments with this paper may be worth trying in a small way, but we should suppose that a thicker layer of some more porous and permeable substance would be preferable.

The wine-makers of California have organized an association which is said to represent five million gallons out of the eight million gallons which it is necessary to control in order to establish a fair price for the wines of that state and extend their sale in the east. Although it costs fifty cents a gallon to import French wines, California producers have been compelled this year to accept ten cents, and in many instances as low as seven cents a gallon for good wine, prices at which there is an actual loss to the grower of wine-grapes.

A correspondent of the *Country Gentleman* objects, with some force, to the practice of removing young trees from the nursery rows in autumn before they have completed their growth. It is a common practice to strip the leaves off from these trees, which does no hurt if the wood is matured. They will then come off easily, but if this is done while the tree is still growing it often shrivels, and suffers in consequence. For orchard planting the writer prefers small well-rooted trees. These are cut back low to the ground the next spring, and they will then grow rapidly, need no staking, and the ample root-system will insure a good top.

At a recent meeting of the Indiana State Horticultural Society a bill was prepared for presentation to the next Legislature, which authorizes the creation of a Bureau of Forestry, Horticulture and Irrigation, and provides for an annual tax of five mills upon every hundred dollars' worth of taxable property in the state for the purpose of establishing an arboretum and a farm for experimental grounds in forestry and horticulture. Another section makes it lawful for townships, counties and cities to purchase and hold in fee simple lands which can be devoted to forest-planting, or to experiments in horticulture, or irrigation, or for public assemblies, or for military encampments.

A correspondent of the *Agriculturist* finds that she can get Sweet Peas early by sowing the seed in October. A bed is dug up deeply, made fairly rich, and the peas are put in only about two inches deep, although after they come up a little earth is sprinkled over the rows. They are three or four inches high before cold weather sets in, when a simple cold frame, twenty inches high at the back and twelve on the front or south side of the row, is put on and old sashes laid over this. Dry leaves and manure are heaped against the frame on the outside, and the plants keep growing a little all winter long. On warm days the sashes are lifted for a few hours, and by the first of April the plants are a foot high and ready for brush. Emily Henderson, Blanch Ferry and Dorothy Tennant under this treatment will be in bloom before spring-planted Peas are fairly up and growing.

Mr. S. D. Willard, in the *Rural New Yorker*, states that nothing is better for covering bruises on trees than oil shellac, with, perhaps, a little flower of sulphur and a few drops of carbolic acid, which last ingredient should be used very sparingly. The mixture can be applied with a paint-brush. For the exclusion of air from wounds, it is suggested that a grafting wax, made of four parts of resin, two parts of beeswax and one of tallow, melted together, poured into water and immediately worked and made up into half-pound rolls, is convenient to have ready for use. Held in the hand so that it is softened, a small lump of it may be spread over a wound, and it will remain for some time and keep out air and germs of disease. If the wound is large the application may need to be repeated.

None of the new crop of Pignolia nuts have yet arrived, but what remains of last year's crop sells for twelve and a half to fourteen cents a pound at wholesale. These nuts come from Italy and the Levant, and are the seeds of *Pinus Pineae*. They do not keep well in summer-time and have to be held constantly in cold storage. They are used mostly for making confections. The edible seeds of our own Nut Pines of the Pacific coast are known as Piñons; they are borne by *Pinus Parryana*, *P. edulis*, *P. monophylla* and *P. cembroides*. These smaller native nuts furnish the Indians with a valuable article of food, and are agreeable to the taste, but they have not gained any place in commerce here. Of the foreign product more than 100,000 pounds are disposed of in our country in a year.

But nine car-loads of California fruit reached this city last week, mostly grapes, and as these supplies have diminished, prices of bananas and Florida oranges have increased from fifteen to twenty per cent. Nearly 40,000 boxes of Florida oranges arrived last week, and in ripener condition than the earlier receipts. A limited stock of the showy Japanese persimmons—the best that have come here this season from Florida—may now be had, and these cost from sixty to seventy-five cents a dozen. Small lots of these persimmons from California are also in the market. Strawberries, in refrigerator boxes holding 105 pint cups each, have been received from California during the past week, and sold at retail at seventy-five cents a cup. Large fancy varieties of cranberries command as much as twelve dollars a barrel.

Only a short time ago it was made public that a beautiful tract of land, containing nearly one hundred acres, in the western part of the city of Hartford, Connecticut, which had belonged to the late C. M. Pond, had been bequeathed to the city for park purposes, and \$180,000 were added to buy more land, if it was needed, and to help in improving it. Eighty acres more in the south-western part of the city were afterward offered by Colonel Pope, and it is now stated that by the will of Mr. Henry Kenny, who died last week, a sum amounting to more than half a million dollars has been left in trust to purchase suitable land in the northern quarter of the city for park purposes. If these tracts of land are connected by broad tree-lined avenues, as is likely, the result will be a continued stretch of eight miles of park and parkway, sweeping in a semicircle half-way round the city. Hartford will be fortunate if the most is made of these inviting opportunities by some designer of taste and experience.

At the late meeting of the Association of Economic Entomologists there was some discussion as to the value of an implement which has been devised by Professor Goff, by means of which kerosene is mixed with water at the instant of passing through a spraying nozzle, so that there is no need of making an emulsion previously. It is claimed that the machine is so arranged that the piston draws on both the water and the kerosene supply and mingles the two fluids in correct proportions. A machine constructed on this principle has been put on the market, but some of the members of the association who had tried it had found it unsatisfactory. Mr. Marlatt, of the Department of Agriculture, stated that the practical working of the machine with him had rendered any application of the oil dangerous to plants since it was impossible to foretell the percentage of oil used. It would seem, therefore, that this would be a dangerous implement to put in the hands of horticulturists, and until some more certain plan of insuring uniformity in the ratio of the water to the oil is devised, it will be much better to adhere to the standard emulsions, which, after all, are not difficult of preparation, and have the advantages, beyond the mere attenuation of the oil, of giving the mixture consistency, which extends its action. Besides this, wherever the spray collects in drops free oil will always separate in sufficient amount to injure the foliage.

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American Horticulture.

AMONG the records of permanent value which have been made by commissions who represented foreign governments at the Chicago International Exhibition of 1893 we have seen none more comprehensive and thorough than the report of Monsieur Maurice L. de Vilmorin, who was Secretary of the Committee on Horticulture from France. This makes a large and beautifully printed octavo volume of two hundred and thirty-odd pages, and while it gives a clear account of the French horticultural exhibit, together with a sketch of the horticultural material from other foreign countries, by far the larger portion of the work is taken up with a review of the present condition of horticulture in the United States. The house of which Monsieur de Vilmorin is a member has had for years large business relations with the horticulturists of this country; he had traveled extensively in this country before, and during the season of 1893 he made extensive journeys over various parts of our territory. These opportunities, a habit of trained observation and a familiarity with the subject in all its multiform phases give great authority to his statements and weight to his judgment in all matters discussed.

After a general introduction on the rapid growth of horticulture in the United States, Monsieur de Vilmorin writes at some length of fruit-culture in particular, its importance, its history and its tendencies, and he adds a careful review of the methods pursued in the temperate parts of our country with our various orchard and stone fruits, grapes and small fruits, besides an account of the cultivation of subtropical fruits in the warmer portions of the country. This is followed by a singularly clear description of our market-gardens and truck-farms with the methods of cultivation, transportation and marketing. In fact, we are not aware that so much accurate information on these subjects has ever before been collected, even for American readers, and we hope in future issues of this journal to treat more fully some of the topics suggested in this section.

The third part of the report, and one that will have special interest for readers of GARDEN AND FOREST, is devoted to ornamental horticulture and floriculture in the

United States. Monsieur de Vilmorin notes the natural and historical causes which have impeded the development of the highest taste in garden-art among us. It is only in the long-settled parts of the Union where there are any estates that have been handed down for some generations and have such a connection with the family history as to inspire strong local attachments. Even in these older states there is more movement of the population than in European countries, and, therefore, not such strong reasons for decorating home-grounds. A great portion of our large territory is still practically in the pioneer stage, and the population, engaged in mining and lumbering and other industrial work, have enough to do to build comfortable houses, without any attempt to adorn their surroundings; and even in the sections where there is a certain stability of population, the country is still new and lacks that mellowness which only comes to a land which has long been subdued and moulded to the wants and ways of men and women who have lived in it and loved it. Monsieur de Vilmorin remarks, too, that in the New England states and New York the rigor of our winters makes it impossible to grow numbers of garden-plants which are easily cultivated in southern France, for example. We do not count this as a serious drawback, however. We have plants enough, and usually try to grow too many. Besides this, there are many flowering shrubs and trees and herbs which are more beautiful here than they are in milder climates, and quite as interesting and attractive as the most showy products of the tropics. If our climate presents difficulties, they have helped, as is suggested in this report, to stimulate the zeal of amateurs in the cultivation of our own beautiful species of shrubs and trees, besides many others from Japan and China and the lofty mountains of India, until the variety which has been secured for outdoor planting leaves nothing to be desired.

The beauty of some gardens in New England and the middle states very plainly impressed Monsieur de Vilmorin, and he was somewhat surprised at many of those he visited in the southern states about Mobile and New Orleans, and at the flower-embowered houses of southern California, where the genial climate will soon make a paradise with a little aid, and where the natural flora, both herbaceous and woody, is one of almost unexampled richness. In these favored parts of our country, especially in the towns, the lavish floral garniture left in his memory impressions like those made by the great gardens of Cannes and Nice. What he was not prepared for, however, was the fact that, in less favored climates and in states which had been settled in comparatively recent years, cities like Minneapolis, Cleveland and Detroit, and the towns of British Columbia, had developed such activity and, in the main, such good taste in decorative gardening.

What particularly arrested the attention of Monsieur de Vilmorin in our northern cities, where the winters are so long and severe, is the generous support given to commercial floriculture. The abundance of cut flowers, especially of Roses and Orchids, and of Palms and other plants used for their form and foliage, is not only alluded to, but the report contains some account of the general method in which they are disposed in decorative work. The statistics of the wonderfully rapid growth of commercial floriculture are very carefully compiled from our Census and other sources, and special methods of cultivation are described. Then follows a sketch of American Rose-culture and the propagation of the plants, for forcing and for outdoor planting, and an estimate of the value of some of our best native shrubs and trees, like the Cornels, Rhododendrons, Kalmias, Andromedas, Sumachs, etc., together with the climbing plants and Grasses most generally used in our ornamental planting. After this we have an admirable section on cut flowers, including those raised in the open air and under glass, with the methods of cultivating each, and another section on the cultivation of plants for market. It may be said here that the production of so many varieties of the

Bouvardia, with flowers of singularly pure color and admirably adapted for cutting, is noted by Monsieur de Vilmorin as one of the happiest examples of American horticultural skill.

In concluding his review of ornamental horticulture in the United States, Monsieur de Vilmorin does not restrain his admiration at its wonderful development in so short a time. He was impressed, too, with the marked advance in garden-art which had taken place since his visit only sixteen years ago, and with the fact that it already fills such an important place in the daily lives of a young people. We are pleased to know that he found so much to approve in the skilled work of the various sections of the Department of Agriculture, and in the researches carried on at the experiment stations and some of the agricultural colleges, particularly those against fungi and insects, which he finds in their thorough and practical quality abreast of the best scientific investigation of the time. Among other educational influences which he enumerates as making the progress of horticulture in the country secure for the future, Monsieur de Vilmorin says, of the Arnold Arboretum, that it embraces the most complete collection of trees and shrubs which now exists in the world, and that every year adds to its richness and helps to place the establishment on a more elevated plane. We must pass with casual reference his appreciative notice of the landscape-gardening in our public parks and cemeteries and of some conspicuously good railroad planting like that which has been begun by the Boston and Albany Railroad in the vicinity of Boston; his approval of our various horticultural societies; his commendation of the work of GARDEN AND FOREST in its peculiar field, and his high estimate of the usefulness of the horticultural press in general. His summing up of the whole suggests some points in which the prosperity of American horticulture ought to be instructive to older countries, and in a future issue of this journal we hope to show that these observations furnish wholesome food for reflection to the people of the United States as well as to the people of France.

THE alarm which has been excited by the invasion of the so-called Russian Thistle has had the good effect of making our farmers suspicious of every strange plant as a possible enemy. Indeed, many common weeds which have been before their eyes every summer, but which they have never observed and practically never seen, are now likely to throw them into a panic. For some years the Prickly Lettuce has been a common inhabitant of the northern part of Indian Territory, but Professor Arthur writes that although the plant has little real resemblance to the Russian Thistle its prickly leaves have raised that suspicion, and many specimens have been received at the Experiment Station of that state with the inquiry whether or no they were that dreaded pest. Even so far eastward as New Jersey the common St. Johnswort, *Hypericum perforatum*, is sent to the station with the inquiry whether or no it is not the Russian Thistle. It is worth noting that the specimen sent to the New Jersey station consisted of dilapidated and disguised portions of a plant with abundant seed-pods which was taken from a car-load of stable litter bought in New York by a truck farmer, and this instance shows how manure from the city stables can operate as a disseminator of noxious weeds. What we wish primarily to observe, however, is that this alarm over the Russian Thistle will serve some good purpose if it arouses farmers to a more careful study of the whole subject of weeds. Anything which impels them to gain new information as to the particular habits of these pests, and the best way of attacking and subduing them, will prove a substantial service to agriculture. In our short dry summers the loss of the water which is stolen from cultivated plants by weeds is often enough of itself to make a crop unprofitable.

An Appropriate Fence.

The picture we give on page 485 shows an excellent type of fence for the enclosure of grounds which do not need to be walled-in, and yet, being spacious and dignified, demand something more than a mere wooden paling or an iron one of an ordinary commercial kind. It was built by Messrs. McKim, Mead & White, whose beautiful gateways to the yard of Harvard University, in Cambridge, are similar in character, although, as befits their station, more stately and ornate. The piers are of brick, slightly varying in color and laid-up with wide mortar-joints, so that the monotonous mechanical effect of our customary brick-work is avoided. The cappings are of stone, and the iron-work is simple, yet relieved from baldness by the introduction of two slender ornamental motives between each pair of the piers. The general result is sober, quiet, unostentatious, and not too pronouncedly urban, yet, on the other hand, vigorous, durable, refined and dignified—not too distinctly rural.

The grounds thus protected are those of the Germantown Cricket Club, near Philadelphia. When cricket is not being played they are much used by lawn-tennis players; and the buildings, erected by the same architects who designed the fence, add conspicuously to their beauty as well as to the comfort of their frequenters. In addition to the main club-house, there is a smaller one for the use of ladies, and also a grand-stand, which, with its fine lines and proportions and slender classic colonnades, is equally entitled to be called a work of architectural art. We have heard it affirmed that these are the most beautiful cricket-grounds in the world; and whether this be strictly true or not, we can well believe that their grand-stand excels any other in dignity and grace.

The tree which overhangs the fence in the foreground of our picture is an old specimen of the Yellow-wood, or Virgilia (*Cladrastis lutea*). It is eccentric in shape and, therefore, not the best example which could be shown of this beautiful species. Nevertheless, it has a special claim upon our interest, for it is believed to be the oldest Virgilia in the United States that is known to have been planted by the hand of man.

Late Autumn in the Pines.

THE foliage of trees is only one of their attractive features, and late autumn brings out others quite as interesting as the summer clothing. This is specially true of the Sweet Gum. As the handsome fragrant leaves loosen their hold they leave behind globular heads swaying on long slender pedicels, which are really ornamental, more ornamental, in fact, than useful, as nearly all of them are filled with a powdery dust and no seed whatever. And the corky, ridged branchlets are curious, too, and the dark gray trunk, so clean and healthy, is a delight to the eye. No insects seem to mar it. Can it be that the pleasant fragrance of the wood is distasteful to these pests? True, we occasionally see some of the more rare larvæ, like the queen of the night, the lovely Luna, feeding on the leaves, and the great larva of the fine imperial moth is sometimes seen here, too, as if the tree was too good for common insects, and only fit for royal ones.

Some of the Black Oaks are wonderfully attractive in late autumn, persistently holding their deep scarlet and dark crimson leaves until well into winter, and the dark rugged trunks are also handsome. Another interesting feature of the Black Oaks is that they are never destitute of fruit, as it takes two years for the acorns to mature. And this makes even our little Scrub Oak attractive in winter. But the Oak, almost more than any other tree, is the home of many noxious insects. More than two hundred known species are catalogued as preying upon them, some living on the leaves, others in the acorns, still others in the young branches, causing them to fall, so that every autumn the ground beneath the trees is almost covered with the twigs. This is the work of the larva of a little pruning beetle, but

it is not so disastrous to the tree as are the larvæ of some larger beetles which work in the bark of the trunk, and still others in the hard wood often tunneling their way to the centre of the tree. I have noticed this in logs which were split for fire-wood. The broad-necked *Prionus laticollis* is the parent of the largest of these larvæ, which, when full-grown, is about three inches in length and as thick as a man's thumb. A few years ago these beetles were very numerous in the Pines, and even the streets of our town were thronged with them, but something has greatly decreased their numbers of late years, while the larva of a large goat moth, probably *Cossus centerensis*, is on the increase. Many empty shells of the chrysalids may be seen sticking half-way out of holes made by the larvæ, both in the White and Black Oaks.

The Swamp Maple holds its deep crimson leaves very late in the season, more especially the younger trees, and their reddish twigs are always attractive. The Magnolia is nearly an evergreen here; young trees wholly so. The Persimmon, too, holds its foliage and fruit until very late, making an interesting feature among the Pines. The Cedars, in fruit, are highly ornamental when mingled with the Holly, with its scarlet berries, each enhancing the other's beauty, and many shrubs are at their best now with scarlet and crimson, and black and gray fruits. Even the poison Sumach looks tempting, with its drooping slender panicles of dun-colored fruit, which remains all winter. A well-grown shrub of *Baccharis*, with its abundant long, white, silky pappus, makes a pleasing feature of the Pines at this season, wherever it occurs.

The continued drought of summer had its effect on some of the plants and has caused them to flower a second time. When the autumn rains came, I noticed several shrubs of *Andromeda Mariana* blooming as profusely as in spring. *Kalmia angustifolia* bloomed also, and the Wild Rose took a fresh start, showing many flowers among its scarlet hips.

The Swamp Loosestrife, *Nesaea verticillata*, is still blooming in sheltered places, and we find here and there *Asters* and *Solidagos* as bright as in early autumn. The Bur Marigold is also blooming, and the Cone-flower and our Pine Sunflower—*Helianthus angustifolius*—have not wholly ceased flowering. The Golden Aster, *Chrysopsis Mariana*, is quite full of bloom.

Rhexia Virginica shows here and there a flower among its pretty urn-shaped pods, and white and blue Violets greet us in moist places.

Many other plants, not in flower, are specially handsome now. *Helonias*, with its tuft of thick shining evergreen leaves, is much more beautiful here amid the Pines than it is in cultivation, and the great clump of grass-like curved leaves of *Xerophyllum* remind us of the old Roman definition of beauty, "multitude in unity." The Pitcher-plant has put on brilliant colors, showing charming tracings and veinings in the curious leaves. The Club Moss, *Lycopodium dendroideum*, like a tree in miniature, is abundant in damp places. The Prickly Pear, *Opuntia vulgaris*, is full of fruit, which is edible, but not tempting enough to induce one to risk the barbed bristles with which it is surrounded.

Vineland, N. J.

Mary Treat.

The Wild Cherry in the West.

The Wild Black Cherry is a tree which has not been planted to anything like the extent it would have been if its merits were appreciated. Aside from the fine quality of its timber, it succeeds under such widely varying conditions of locality that it should form a part of every prairie grove. At Farlington, Kansas, about six acres of the Kansas City, Fort Scott and Memphis Railroad Company's plantation were planted to a mixture of Wild Cherry, Black Walnut and Chestnut in 1878. Not only have the Cherry-trees grown well, but they equal in size the Catalpas planted at the same time, and are much better shade-making trees than the Catalpas, and therefore valuable nurse trees for the light-foliaged Black Walnuts. One of the tallest Wild

Cherry-trees measured thirty-nine feet eight inches high, and was six and a half inches in diameter three feet from the ground. The Wild Black Cherry was found in good condition at Ogallah, in north-western Kansas, on high dry land, and trees at Brookings, South Dakota, are among the very best in the experiment forest-plats of the Agricultural College. At this place there are a number of half-acre plats in different mixture. The one composed of Wild Cherry, White Elm, Green Ash and White Birch, planted by single trees in the order named, four feet apart, and now seven years old, is the best plat in the plantation. The Ash and Elm are growing tall and straight, being forced up by their denser-foliaged neighbors. The Cherry-trees are only beginning to show strong leaders, having thus far been round-headed and full of branches; but, as seen in the Farlington plantation, as the trees grow older the laterals die off, one branch takes the lead, and the bole lengthens into a good straight shaft. An advantage of this free branching during youth is the ability to shade the ground, and thus prevent weed-growth.

The Wild Cherry is also one of the best growing trees in an irrigated nursery at Denver, Colorado, so that it proves itself useful over a wide area, and should be generally planted.

Washington.

Charles A. Keffer.

Foreign Correspondence.

London Letter.

THE CHRYSANTHEMUM BREEDER.—A lecture on the crossing and raising of Chrysanthemums from seed was given this week at the meeting of the Royal Horticultural Society by Mr. Charles E. Shea, of Fooks Cray, Kent, a well-known amateur breeder and grower of Chrysanthemums. Contrary to the general belief, Mr. Shea says the crossing of these plants and the ripening of their seeds are easy of accomplishment in England. We receive the bulk of our new seedlings from France, Italy, China, Japan and the United States. Mr. Shea stated that probably one hundred thousand new seedlings are raised and tried in America every year, and that some noted growers in England test ten thousand new seedlings annually. At this rate we are certain to metamorphose the garden Chrysanthemum before very long.

Mr. Shea showed that while it is generally believed that the Chrysanthemum will not ripen seeds in this country because of the unfavorable character of our winter weather, with a little contriving they can, as a matter of fact, be made to seed quite freely. He obtained a quarter of a pint of good seeds this year as the result of his operations, all conducted in a small greenhouse thirty feet by twelve feet. He recommends that the floor of the greenhouse should be of cement, backed in the middle, with a drain at each side, so that the water that runs from the soil in watering may get away easily. A dry atmosphere is of first importance. Air is admitted to the house at all times beneath the hot-water pipes, fresh air also being essential. All the sunlight possible is, of course, beneficial to the plants.

In choosing plants to operate upon, Mr. Shea prefers those which have been under ordinary treatment, as generous culture, such as is given when large flowers are aimed at, has the effect of weakening, and even destroying, the organs of fertilization. Medium-sized blooms, with what growers call an open eye—that is, a number of disk-florets exposed—are best, and such flowers are produced by even the sorts that are most double toward the end of the flowering period. The smaller the eye the better the flower is for breeding purposes. When the pollen appears on the disk the flower should be watched until all the anthers have burst. Chrysanthemums are, according to Mr. Shea, decidedly proterandrous—that is, the pollen is ready some time before the stigmas—so that it is scarcely likely that any flower (head) would be self-fertilized, although, of course, pollen might reach it from another flower on the same plant. The stigma is in a receptive

condition when its two lobes spread out. This can easily be seen with an ordinary pocket lens. The flower should then be dusted over with pollen, not once merely, but once or twice a day for several days. Every head thus treated will produce good seeds. Mr. Shea deprecates the shearing off of the ray-florets preparatory to fertilizing, although he says it is invariably practiced by American breeders. He recommends that the ray-florets should be removed with scissors as soon as they wither. The seeds mature and ripen quickly if the plants are placed near the warm pipes, and if the flowers operated upon hang over so as to almost touch the pipes, so much the better. When the seeds are ripe they should at once be removed from the receptacle. Mr. Shea's test for ripeness is pressing the florets with his fingers, and if they come away easily they may be gathered at once. The flowers nearest the centre of the disk invariably produce a large proportion of single-flowered seedlings, but flowers on the outside produce nearly all double-flowered progeny. Mr. Shea has found that seeds ripened on the extreme outside of the flower-head produce practically none but double-flowered sorts.

The best results, so far as time of flowering is concerned, are obtained by crossing early with late flowering sorts. Such a cross yields varieties which flower in the middle of the season, say the second week in November, and these find most favor with growers. The qualities to be aimed at depend upon various circumstances. Mr. Shea has always discarded tall-growing sorts, the most desirable height, in his opinion, being five feet or less. He also destroys varieties that have bad foliage. With regard to the size of the flowers, that, he said, was controlled by the exigencies of the exhibition tent. When two flowers of equal quality in all points except size were placed before a judge he had no alternative but to give the prize to the larger of the two. But there was no doubt that too many points were given for mere bulk of flower. Some of the largest-flowered among the newer sorts were coarse and ugly. Refinement of character—that is, elegance of form and pleasing colors—ought to be a *sine qua non* with raisers of new Chrysanthemums. In that direction much good work remained to be done. Mr. Shea concluded by urging English horticulturists to raise their own seedlings and to look out for the blue Chrysanthemum.

MORE NEW CHRYSANTHEMUMS.—I trust I am not mistaken in believing that your readers are interested in learning what among the new varieties of Chrysanthemums are favorably received here. I assume this is so because a large proportion of our best new sorts are, I believe, of American origin. This week the number of certificated new varieties has been considerable. I would, however, first name a variety which has not yet won that distinction, but which will, in the opinion of competent judges, soon become a great favorite on account of the exceptional color of its large blooms. It is evident from its name, *Madame C. Capitant*, that it is of French origin, although it was exhibited by Mr. Godfrey, of Devon. It is a large, full, somewhat flat Japanese variety, with broad petals, and its color is a pale pink, exactly the color of a *Malmaison* Carnation. It is sure to be in great demand, especially with ladies.

Miss Maggie Blenkiron, the variety mentioned by me last week, was, I find, raised by Mr. C. E. Shea. It is a large incurved Japanese, almost a pure incurved, the flowers being conical, and the color rich yellow shaded with crimson. *Dulcie Schrøeter* and *Sir E. T. Smith*, also from Mr. Shea, are two rich yellow, large-flowered varieties of the reflexed Japanese class. Mrs. W. J. Godefroy is one of the white, hairy-flowered section, and, although it obtained a certificate, I question if it is distinct from Mrs. A. Hardy. Another of the hairy-flowered section is Mrs. Ward, the flowers of which are very large and colored coppery red, tinged with crimson. *J. Bidenscope* is a big-flowered Japanese variety of a bright magenta color. *J. Lightfoot* is also a large-flowered Japanese of a pale lilac color, the margins of the petals being of a deeper shade—a distinct and pleasing break. *Garnet* is a very large incurved Japa-

nese, as regular almost as *Lord Brook*, the color a rich vinous purple, with a gray-purple reverse. *Alice Seward* is a similar variety, but colored crimson-purple, with a silvery reverse. I have a weakness for the single-flowered varieties, and I, therefore, gladly record three beautiful additions to this section in *Purity*, which has flowers of the purest white, four inches across, the bright yellow eye-like disk being an inch in diameter; *Carrie Wells*, a glorified ox-eye Daisy, with a deep yellow disk and spreading terracotta red ray-florets; *W. E. Renfrey* has flowers four inches across and ray-florets of a rich glowing magenta color.

Mr. Cannell exhibited a new introduction from Japan, named Mrs. R. Filkins, which has medium-sized flat flowers with narrow petals, fringed at the apex and of a bright yellow color. It is described as forming a big bush which flowers as freely as *Miss Rose*. Some immense flowers of *Hairy Wonder* revealed the coarseness and ugliness of this variety when overfed. Another ugly variety of this class, which, however, succeeded in obtaining a certificate is *Princess Ena*, a rose-purple sport from *Hairy Wonder*.

GRAFTED CHRYSANTHEMUMS.—Two years ago a Belgian gardener exhibited some Chrysanthemums which he had grafted on *C. frutescens*, the *Paris Daisy*. They were remarkable for the strength of their stems and the substance and size of their flowers. In the January number of the *Revue de l'Horticulture Belge* for this year there is a figure of one of these grafted specimens when two years old, with an account of the treatment pursued by Monsieur Alex Callier, the grower of the specimen, which was a dwarf standard with a head nearly nine feet through, bearing seven hundred and ninety well-formed flowers, the variety being *Val d'Andorre*. The plant was grafted in January, and after flowering the following winter it was shaken out and repotted, first into a comparatively small pot, and then into larger pots, until finally it was planted in a tub a yard across. The advantages claimed for grafted Chrysanthemums over those on their own roots are that (1) large specimens are easily grown and the stems are kept perennial—there being, of course, no suckers; (2) the plants grow more vigorously and flower more profusely. At Kew there are now half a dozen of these grafted Chrysanthemums. They were grafted in January last on young stocks a few inches long, and they are now quite equal to the best of the plants on their own roots. The sorts tried are *Maiden's Blush*, *Stanstead White*, *Val d'Andorre*, *Source d'Or* and *Golden Dragon*. Raisers who wish to give vigor to seedlings which are weak on their own roots should try them on the *Paris Daisy*. It is possible that very large shrubby Chrysanthemums could be grown out-of-doors in many places if they were grafted on *C. frutescens*.

London.

W. Watson.

Plant Notes.

The Ridgely Chestnut.

THE soil and climate of Delaware appear to be well adapted to the growth of the Chestnut. The trees are plentiful in all parts of the state, and many of them produce nuts of large size, which are of the finest quality. The largest and best chestnuts are those obtained from trees in the vicinity of Dover. This is, no doubt, due to the fact that upon the farm of Mr. D. M. Ridgely, about two miles west of Dover, there is a very large Chestnut-tree, known as the "Original Ridgely Chestnut-tree." This tree is said to have sprung from a sprouted imported Chestnut, which was presented to Mr. Ridgely by Mr. Dupont, and planted some sixty or more years ago upon the farm where it now stands. The nuts produced by this tree are known as *Ridgely chestnuts*, or *Dupont chestnuts*. Many seedlings have been grown from the nuts of this tree, but few of them bear nuts which, in both size and quality, equal the product of the original tree. Those of large size are generally of an inferior quality, while nearly all that are small are of excellent flavor.

I visited this tree last fall and found that it measured fourteen feet in circumference at three feet above the

ground, and is not less than seventy-five feet high, while the spread of its branches is nearly equal to its height. It rarely fails to produce a crop of nuts, and they sell readily in the markets for a high price.

The nuts are fully equal in both size and quality to the Paragon, of which so much is now said. One nurseryman at Wyoming, Delaware, showed me samples of chestnuts,

the following year. The United States Pomologist refers to this Chestnut in his reports for the years 1889 and 1890. Chestnut-culture is each year receiving more attention in this state. The Ridgely has given the most satisfactory results of any variety in this section, and it deserves to be more extensively disseminated.

Experiment Station, Newark, Del.

M. H. Beckwith.



Fig. 77.—Fence enclosing the grounds of the Germantown Cricket Club.—See page 48a.

a few days ago, which were produced from Ridgely seedlings of his own growing, that were fully equal to the Paragon nuts. The growing of the seedling trees is not very satisfactory, as they are usually slower to come into bearing than the grafted trees, and the nuts are very apt to be inferior to the seed planted. Seedlings may be grafted as readily as the Apple, and the grafts will often produce nuts

HYBRID TEA ROSE, DEAN HOLE.—Three years ago a hybrid Tea Rose, of unknown parentage, was brought into this country from France, and it has proved a very desirable Rose for forcing. This was Madame Caroline Testout. The flower is of an especially pleasing color, which light up beautifully, and is probably the clearest shade of pink known in the whole Rose family, and, altogether, it has an

air of refinement quite distinct and peculiar. The plant also grows well and blossoms freely out-of-doors. Last spring a sport from this Rose originated with Mr. John H. Taylor, a well-known Rose-grower of Bayside, New York. The habit of the new plant is good, it grows vigorously, has good dark green foliage, blooms continuously and bears its flowers on good stout stems. The color is a novelty in its class, being a creamy white, shading to a delicate pink in the centre of the flower. Indeed, the prevailing color may be said to be a very pale pink, resembling in shade the Daybreak Carnation, with the color deepening a trifle at the centre. If the new Rose resembles its parent in constitution it should prove hardy with very slight protection, and it is probably as good for cultivation in the open air as for forcing under glass. As we stated in a recent issue, a flower of this new Rose was exhibited in this city at a banquet in honor of Dean Hole, and it was named after the guest of the evening by Robert Craig, President of the National Rose Society. Perhaps it will lead to no confusion, but the fact ought to be generally known that there is another Rose, a hybrid Perpetual, which was sent out by G. Paul in 1872 under the name of S. Reynolds Hole. This is said to be a Rose of great beauty, maroon flushed with scarlet-crimson, full and well formed, but not adapted to general cultivation.

BEGONIA SOCOTRANA.—When better known, and its demands for a long summer rest are understood, this is pretty sure to become a popular winter-blooming greenhouse plant, as it flowers in November and December, when free-blooming plants are most in demand and most difficult to have. No other Begonia remains longer in good condition or excels this species in the beauty of its large bright pink flowers and ample circular cup-like leaves. Begonia Socotrana is an herb with a thick, succulent, slightly branched stem six to ten inches high, orbicular peltate leaves, seven to ten inches in diameter and much depressed in the middle, and bright rosy pink flowers fully four inches across. It produces tubers freely at the base of the stem, by which the plant can be easily increased. When the leaves begin to wither in January or February the roots should be dried off and the tubers taken from the pots and kept in dry sand in a cool place until they begin to show signs of growing the following summer or autumn, when they should be potted and treated like other tuberous Begonias. A long period of absolute rest is all that is required to secure large foliage and abundant flowers. B. Socotrana was discovered by Professor Bailey Balfour on the hot and dry island of Socotra, off the coast of Arabia, in the Indian Ocean, and was introduced by him into European gardens in 1880. It has been freely used by hybridizers, and is an important element in some of the new winter-flowering hybrid Begonias, although none of them that we have seen equal it in habit, purity of color and profusion of flowers.

Cultural Department.

A New Method of Irrigation.

MUCH has been written of late years concerning the necessity of irrigation, and several experiments in what is known as subirrigation have been published. The laying of tiles sufficiently deep to be out of reach of the plow, and making them serve for drainage purposes in spring, or whenever there is an excess of water in the soil, and using them for purposes of irrigation by stopping the outlet in summer, has been to some extent satisfactorily practiced, but it is not applicable to all soils, and no perfect system has yet been devised. An interesting paper was read before the Association of Colleges and Experiment Stations, at their recent meeting, by Professor F. W. Rane, of the West Virginia University, which presented another method of irrigation which is original, and may prove of practical use in horticulture where the object is to get water to the roots of the plants, and use the water with as

little waste as possible. Professor Rane's plan, as he described it, was the following :

Common porous two-and-a-half-inch drain-tiles were laid in a continuous row, end to end, on the surface of the soil, and vegetables were planted on either or both sides of the line. The tiles were one foot long, and by pouring in the water at one end of the line it was distributed at the joints throughout the length desired, when the opposite end was stopped up.

Take Celery as an example crop for irrigation on uplands. We plant the Celery as above stated, and while it is young we have simple surface irrigation ; but as the crop grows we bank it up, and finally have the tile covered, and thus have subirrigation. The tiles are cheap and last indefinitely. When the Celery is harvested the tile is dug out also and piled up or used for subirrigation in the greenhouse-beds. Potatoes and various other crops can be grown in the same way. The Celery watered this year grew well, and did not rust. Besides this, we were able to water twenty times as much space in the same time as in the ordinary way with ditches. Besides saving time, this plan delivers the water where it is most needed, and we have reason to believe is fully as economical with water as with time.

Rows of Celery watered in this manner were planted in a Potato-field, leaving every other space between the Potato-rows vacant, so that two rows of Potatoes could be dug together when ripe. Besides watering the Celery, the moisture reached the tops of the Potato-hills, as was plainly seen every morning by the dampness of the surface throughout the intervening space, thus showing that the watering was sufficient for at least three feet and three inches on each side, or six feet six inches in all, the rows being three feet three inches apart. Where the rows were on a slight incline we slipped a piece of tin between the joints, and held the water where it was needed ; then, by pulling it out and inserting it further down, another section could be treated. The sections can be made longer or shorter, according to the angle at which the ground inclines.

Indian Azaleas.

FLORISTS every year import Indian Azaleas by the thousand with their buds already set, and bring them into flower principally for the Easter trade. The plants are sold, but what becomes of them it is hard to tell. They rarely find a place among window-plants, unless, as already intimated, they have been bought from the florists evidently by people who do not know how or cannot find time to attend to their simple wants. It is a fact, notwithstanding, that few plants are easier to grow and take care of than these, and some acquaintances of mine have plants which continue to improve each year.

It is evident, from the condition in which imported plants arrive, that they are not grown in pots. They come with nearly square masses of earth, with no indications of being cramped as pot-grown plants are, and they are evidently either grown in the open where they can be protected in winter, or can be moved in for protection. This is an easier and more satisfactory plan than growing them continuously in pots, providing the natural soil is suited to them, as is the case in those parts of Europe where they are grown extensively. They like a deep peaty soil in which there is a substratum of sand, but they will thrive well, under artificial conditions, in common garden-soil moderately enriched with decayed leaves. There is to be found in one Massachusetts garden, at least, superbly grown specimens which have not been in the greenhouse for eighteen years. Some of these plants are between forty and fifty years old. They flower in June, at a season when they can be arranged in large numbers, in more or less natural fashion, in the open air, with merely a cover of canvas to protect the flowers from sun and rain. Their beauty can be more fully appreciated when seen in this way than in the confines of a greenhouse. They are stored in deep glass-covered pits, with the additional protection of shutters and leaves to keep out the frost. On my suggesting that by this method they were being retarded beyond their natural blooming season, which is toward the end of April and May, and that there could not be time enough to complete their growth and mature their buds, the gardener said they had never failed, adding "They have got used to it." This he ascribed to the plan of cultivation followed, which, although contrary to the old-time notions, has been very successful. Years ago these plants were grown in pots ; they had been shifted from time to time until they filled pots of the largest size. It was found that these old solid balls of earth had not a live feeding root in the interior of the ball. Strong roots traversed the ball to the sides of the pots, where alone there was new soil, and there the feeders were.

Under these circumstances the best thing to do was to give top-dressing, for to reduce the ball meant breaking away what few feeders there were, and the consequent loss of a season before vigor returned. Planting out in the open ground finally had to be resorted to, and is now practiced every year.

When the blooming season is over, toward the end of June, the plants are overhauled as soon as possible, all dead and weak shoots and seed-vessels cleaned off, and the extra-strong shoots pruned in. In reducing the balls of earth preparatory to planting it will be found that very little soil adheres to the original ball, very few, if any, new roots having been formed through the winter, all the work of the plants having been done during the preceding summer. The potting is only a handy way of caring for the plants through the winter and for convenient handling when in bloom. In planting, the plants are placed a little deeper than they would be if potted. This encourages new roots on the surface above the original ball; as the gardener says, "It gives them new life." It will be noted that this ball of earth is very solid. This packing and pressing is done by the plant itself, and the hardened ball will be found to be a solid mass of fine roots. It is an important element of success that this ball be kept moist during the growing season. The soil must be made very firm about the ball, and a slight basin formed, so that water does not run in between the ball and the new soil. In connection with this it should be borne in mind that the Azalea grows on the mountainous regions of India, through China and in Japan, where there is a very heavy rainfall during the growing season, and so, under artificial conditions, they should be almost saturated with water during the months of July and August. In potting for the winter sandy soil should be used. It is easier worked in and about the ball, and comes off easily in spring. In winter all the light and air possible should be given. Very little water will be required if the plants are in good condition when put away.

Wellesley, Mass.

T. D. H.

Rose Notes.

AS late as the 6th of November I saw, near Philadelphia, good flowers on unprotected plants of the La France Rose outdoors. This habit of continuing to flower until freezing weather is one of the good forms of this excellent Rose. During hot summer weather the outer petals sometimes burn, but the flowers are at their very best when the days become short and the nights cool. The flowers are then of the largest size, full and double, and delightfully fragrant. The so-called White La France, properly Augustine Guinoisseau, has also proved a good summer Rose, either for outdoor planting or under glass, but the title White La France is a misnomer, for the flowers are usually pinkish.

American Belle, the light-colored form of American Beauty, has found more favor as a cut flower in its home market of Philadelphia than elsewhere, though it certainly is a beautiful flower when well grown. Its growth, however, is sometimes disappointing, so that its parent is still in the lead as a commercial variety.

Rose sports have lately become quite numerous, and a majority of them seem to tend toward lighter colors than the parent, though notable deviations from this rule are found. Some years ago a bright red sport from La France appeared in the establishment of a commercial florist, but the sport lacked the free-flowering habit of the parent, and it was discarded after a season or two of trial.

Mrs. W. C. Whitney has so far proved a Rose of good constitution, and its deep pink flowers are produced with great freedom in winter. It is a useful summer Rose, too, although its color is then less attractive.

Kaiserin Augusta Victoria not only forces well, but it grows strongly out-of-doors, and bears large flowers. Belle Siebrecht and Mrs. Pierpont Morgan are the most promising of new American varieties, although it is never safe to predict the value of a Rose on a short trial. The past season has been a hard one for outdoor flowers, owing to the extreme heat, but where the Roses have been watered freely a fair succession of bloom has been kept up, though the flowers were in most instances smaller than they would have been in cooler weather. The largest flowers I have noticed outdoors this year were on a strong plant of Paul Neyron, and they would measure from five to six inches in extreme diameter. This is a good size, even for this variety, and it shows what can be done in the cramped area of a city front yard by careful management. Captain Christy, though it does not flower freely, is another variety which can be commended for outdoor culture, and when in good condition the flowers are of rare beauty.

Holmesburg, Pa.

W. H. Taplin.

Protecting Strawberries.—This is about the proper time to scatter some protecting material over Strawberry-beds. We prefer to put it on when the ground is hard-frozen, and a wheelbarrow can then be run through the rows without disfiguring anything. We have found no better cover than dry leaves scattered evenly over the whole quarter. Some corn-stalks or pea-brush, laid thinly over them, will prevent the wind from blowing them about. Many growers make a great mistake in heavily mulching the beds with rotten, or half-rotted, manure. We have often seen this covering taken off early in the spring, and the blanched, sickly appearance of the plants was evidence enough of the folly of giving such winter protection. Plants protected by leaves never fail to show up green and fresh when uncovered, and we rarely lose a plant by this treatment.

Taunton, Mass.

W. N. Craig.

Correspondence.

Planting White Pine.

To the Editor of GARDEN AND FOREST:

Sir,—Some of the farmers near my country house in Andover, Maine, are discussing the expediency of planting trees on the wild lands and pastures from which White Pine was cut many years ago. Where can they find rules for such forest-planting—simple, clear rules—giving the distances between the trees and rows; stating whether it is better to plant seed or transplant young trees; whether the trees for transplanting should be one year old, or two years old, or older yet, besides such other information as they require? All these lands could be covered again with forests if the proper method was only pursued, and I should be obliged for any suggestions.

Boston, Mass.

H. W. Suter.

[The results obtained by planting the seeds of the White Pine in the open ground where the trees are to grow permanently have usually been unsatisfactory. Shade and moisture seem to be required to insure a good crop of seedlings, which, moreover, are very delicate and suffer at first from full exposure. The only practical way to cover a piece of ground with White Pines, where none are springing up naturally from seed scattered from trees in the neighborhood, is to plant seedlings obtained from the woods or raised in nurseries. Plants from three to five years old and six to ten inches high are best for this purpose. If the ground is much broken and very stony, the plants should be set two to four feet apart between the rocks, wherever there is soil for them. If the surface of the ground, however, permits the use of a plow, shallow furrows four feet apart each way should be made and trees set at their intersection. The trees would grow faster during the first five years if the whole of the ground to be planted could be plowed before the furrows were laid off and kept clear of grass and weeds until it was completely shaded. This, however, adds very considerably to the first cost of the plantation and is not necessary, unless a particularly rapid growth during the early years of the plantation is required. If the ground is not laid off in furrows, holes must be made for the trees with a spade; a piece of sod a foot across should be first cut out and the soil beneath it loosened to the depth of ten inches; in this loose soil the tree should be planted, and then the sod cut in two pieces to fit round the tree should be replaced, the upper side downward in the hole. The roots of the trees should be covered with mud to prevent them from drying up after they are unpacked and before they are planted. This is best done by dipping them into a tub of wet mud of the consistence of porridge. They should then be tied in bundles of convenient size. A man or boy carrying one of these bundles and walking ahead of the planter should drop a tree at each hole or at the intersection of the furrows; the planter following behind should take the tree, holding it in his left hand, spread out the roots with his right hand, draw the soil over them and press it down firm with his foot. The two important things in tree-planting is to spread out the roots that they may grow without becoming matted, and to make the soil about them hard and firm. There is no danger of making it too compact and hard. Good plants carefully set in this way ought to grow without any further

care and should cover the ground at the end of four or five years. A few years later it will probably be necessary to cut out the trees in every other row, although the character of the soil and the size of the plants must determine the period and extent of such thinnings. It is generally cheaper and more satisfactory to use nursery-grown plants than to obtain them from the woods, and, unless very large plantations are to be made during a series of years, when a home nursery should be established, it is best to buy plants from some reliable nurseryman. Seedling conifers are difficult to raise in this climate, owing to the heat and dryness of our summers, and none of them, perhaps, are more difficult to manage than the White Pine; and no one is successful with it unless he makes the raising of seedling conifers a business, and has had some experience in it. When a few trees to bear seed and restock the ground are left in cutting a forest of Pines, when fire is prevented from burning off the herbs and low shrubs, which make the best possible protection for seedling conifers, and the surface of the soil, and when cattle are excluded, the ground will soon be covered with Pines again, and the foundation of a new forest will have been laid in the cheapest and most satisfactory manner. A self-sown forest costs nothing but the employment of a little common sense and, perhaps, a little rough fencing. There is no interest account running against it, while the interest against a planted forest, which will cost, at the lowest estimate, from five dollars to ten dollars an acre to establish, must, at the end of even fifty years, be debited with an interest charge which will more than eat up all the possible direct money profits of the undertaking. —Ed.]

Extracting Cedar of Lebanon Seeds.

To the Editor of GARDEN AND FOREST:

Sir,—I notice what you say about demolishing Cedar of Lebanon cones in GARDEN AND FOREST of November 14th, and this reminds me that years ago when this beautiful conifer was in much greater demand at the nurseries than at the present time, we always imported the cones in order to secure fresh seed. To extract the seed we placed the cones singly in a vise, then, with a three-eighths of an inch auger-bit, bored out the rhachis, or central woody part, after which the scales were easily pulled apart and the seeds separated from the scales. There are many species of our indigenous Pines that have very persistent cones, which will remain closed for years if gathered and stored in a dry place. Boring out the centre is a very simple and ready means of getting at the seed when it is wanted. This habit of remaining closed is a wise provision of nature for preserving the seeds, and as long as they remain hermetically sealed up in the cone they lose little or nothing in the way of vitality, and I have myself opened Cedar of Lebanon cones twenty years after gathering them, and found the seed fresh and sound. There are also instances on record of seeds of the same sprouting freely after having remained in the cones for forty years.

Ridgefield, N. J.

A. S. Fuller.

Chrysanthemums for Outdoor Culture.

To the Editor of GARDEN AND FOREST:

Sir,—I was greatly interested in an article in your issue of November 7th, from a New Jersey correspondent, on outdoor Chrysanthemums. I have had my trials in the same line, and at times nearly despaired, but I hope this year's experience has set me in the right direction. The Buffalo season may not be as long as that of Elizabeth, but it is greatly favored, as the lake assures us a very equable temperature. Tender plants are seldom killed here in October, and they were not seriously injured this year till the severe freezing of November 11th. This permits us to bloom all the earlier Chrysanthemums outside if we desire, and makes their cultivation possible to many who have no room for them indoors. Their season can be finished readily enough by potting them in full bloom and setting them in a window, but the average householder cannot successfully bloom them in the house.

For our purpose the strong, stocky, early sorts should be selected. I have tried in vain to raise the old purplish red Duchess in this way. It is hardy and vigorous, readily wintering out-of-doors, and it is a great bloomer, but it is late, and will grow about as high as a man's head, in spite of all prun-

ing. Last spring I set out a single plant of Mrs. Whilldin, an early yellow sort. It produced, without assistance, a single stalk, which spread out like a tree, and grew into a veritable little tree about two feet high. When hard frosts threatened it was potted, and finished its season in a window. I am convinced that such easily handled sorts are to be had in all desirable shades by carefully selecting from the multitude of varieties. Such points as these are the ones about which amateurs need information. There are good plants to be had. Who is testing them for outdoor cultivation, and who will give us the results of their experience?

We are greatly pleased with the new silvery, purplish pink Chrysanthemum, Maud Dean, the finest, it seems to me, that has appeared lately. Florists have greatly overdone the yellow varieties to the expense of other colors.

Buffalo, N. Y.

John Chamberlin.

The Walking Fern and its Haunts.

To the Editor of GARDEN AND FOREST:

Sir,—The curious and beautiful *Camptosorus rhizophyllus* is occasionally listed by florists. Perhaps I have failed to give it proper treatment, but I have always found it a most fastidious pot-plant, exacting conditions of shade, drainage and ventilation that none but those with unusual facilities could give it. It has been very capricious with me even with outdoor transplanting, refusing to live except when planted in the shadiest nook of the rockery, and even there producing but a feeble, protesting sort of growth, with short yellowish green fronds, while the curious and characteristic attenuation of the frond's tip, that tapers to a thread only to fall to the earth and spring up a new *Camptosorus*, is much curtailed, and in some instances lacking. In its native haunts, however, the plant shows not a trace of weakness. There it is fairly riotous with life and vigor, embroidering the moss-carpeted rocks with feathery tufts of slender, procumbent and spreading fronds of the richest, deepest green, each tuft linked to its neighbor by the slender chain-like acumination that binds each of the little colony together. It is very plentiful here, but I have never seen it growing in any other situation than at the foot of a precipice or rocky bluff, usually attached to the moss that covers rocks, or else growing between the crevices of limestone rocks. The soil is always of a highly calcareous nature, and the shade dense. Here, with a home to its liking, it faces alike heat, cold, drought or flood, ever luxuriant and green. I know of one such rocky valley where these Walking Ferns grow with singular luxuriance and reach the largest size. In the preparation of a road-bed for a railroad every vestige of tree or underbrush was removed, but the piled up rocks were left undisturbed. Three years afterward the once beautiful *Camptosorus* had dwindled to a few pale yellowish specimens of stunted growth. This would seem to show that we can only succeed in transferring this lovely evergreen wildling to our homes by giving it deep shade and a limestone anchorage for its roots.

Plaineville, Mo.

Lora S. La Mance.

Recent Publications.

Text-book of the Diseases of Trees. By Professor Robert Hartig. Translated by William Somerville. Macmillan & Co., London and New York. Pp. 331, 8vo, fig. 159.

The leading laboratory of the world for the study of the diseases of trees is that of Professor Robert Hartig at Munich, and no other botanist has made in this field so many investigations in which scientific study has been united with practical suggestions. The first edition of his *Lehrbuch der Baumkrankheiten* appeared in 1882, and was the first work on the subject which gave a clear and satisfactory presentation of modern investigations. The excellent translation by Professor Somerville, revised and edited by Professor Marshall Ward, follows a later edition of the *Lehrbuch*, which includes considerable matter not found in the original work. In the preface to the English edition Professor Marshall Ward traces in an interesting manner the development of plant pathology in its relation to forest-trees, and especially the contributions of Hartig to our knowledge of the subject.

While the *Lehrbuch* was highly valued as an authoritative treatise by experts in foreign countries as well as in Germany, the English translation brings within the easy comprehension of a large circle of readers a most interesting account of the fungous parasites which attack forest-

trees, the action of unfavorable conditions of soil and air upon them, and, incidentally, an account of the anatomy and physiology of the healthy tree. After an excellent introduction on the causes of disease which are classified as due to parasitic Phanerogams and Cryptogams, to wounds and to unfavorable conditions of the soil and air, the writer passes to an account of plants like Mistletoe and Dodder, which, although not strictly parasites, sometimes do considerable injury to trees. The greater part of the book is devoted to descriptions of the special parasites belonging to the different orders of fungi and their action. This part of the book is of necessity somewhat technical, and to follow all the details implies a previous acquaintance with the structure and classification of fungi, but the numerous figures make it possible for the reader who does not possess this knowledge to obtain a large amount of valuable information which would be beyond his reach in more elaborate mycological treatises. Especially important are the chapters relating to the large fungi, like *Trametes radiciperda* and several species of *Polyporus*, which cause rotting of timber, as well as those on *Agaricus melles* and the dry-rot fungus, *Merulius lacrymans*. An American is struck by the large number of species known by careful investigation to cause disease in Germany, while, in our less developed scientific condition, the same fungi are passed by as harmless in this country. It may possibly be the case that, owing to large tracts of forest still being in a condition of nature, certain fungi, which prove to be decidedly injurious in the more artificial conditions of forest-culture in Europe, are here really comparatively innocuous. *Polyporus Schweinitzii* is said to be injurious, not only to the Scotch Pine, but also to our White Pine, when growing in Germany. *P. Schweinitzii*, which we consider to be a native American species, which has only comparatively recently been introduced into central Europe, is common under Pines with us, but is very seldom found growing on them, and, as far as is known here, can hardly be said to injure living trees. The lateral form mentioned by Magnus in Berlin is also found in this country, although it is quite rare, and we have never known it to occur on living trunks. Certainly our White Pines, under which the *Polyporus* grows, do not suffer.

The chapter on wounds is admirable, and we wish that it may be read by all persons interested in the preservation of trees. It explains most clearly how nature tries to heal wounds and why open wounds are dangerous. The practical man who has mastered the contents of this chapter will recognize many ways of applying the information there given. The last chapter gives the diseases described in the volume, classified according to the plant and part of the plant attacked, on the plan adopted in Kirchner's *Pflanzenkrankheiten*. Whether this plan has been proved practical by actual experience, we do not know. For Americans, at least, the present chapter is inapplicable, since our diseases are by no means identical with those of Europe, although, in general, similar to them.

Prickly Lettuce, *Lactuca Scariola*, is a native of the region about the Mediterranean Sea, and has spread as a weed over all the arable parts of Europe and Asia. It was first observed in this country thirty years ago at Cambridge, Massachusetts. Between 1878 and 1882 it made its appearance in nearly all the prominent railroad centres along the Great Lakes and the Mississippi River, and is now an abundant weed throughout a large portion of the central west, where it apparently reaches its most vigorous development. Its march has been so steady as to fill many agriculturists with alarm, and it has been spoken of in the bulletins of several experiment stations. The latest and most complete account of the weed is given in *Bulletin No. 52 of the Purdue Experiment Station*. Professor Arthur speaks of the plant as closely resembling the *Cos* varieties of Lettuce, and, in fact, he considers that there are grounds for believing that the garden forms of Lettuce are derived

from this plant. It is an annual, but occasionally a seed germinates in autumn, and the plant will pass the winter in this form, thus becoming a winter annual as distinguished from true biennials. The height of the plant varies from a few inches in poor soil to more than six feet in rich soil. It consists generally of a central straight shaft, branched above, the lower half of which is clothed with leaves four inches to six inches long by one or two inches wide, and the upper portion of the stalk spreading into rather bare much-divided branches, which bear from July to September inconspicuous yellow flowers. Each head gives rise to a dozen dark brown fruits, consisting of a dry capsule enclosing a solitary seed with a filmy parachute like that of a Dandelion-seed, which serves to carry it long distances. One interesting character of the plant is that the leaves on the stem all assume a vertical position by turning a quarter of the way round upon the stem near the base, and they all stand on one plane, and this plane lies in the meridian, so that if a plant is looked at from the north or south the leaves present their edges only. It is thus a true compass plant, like the Rosin Weed of our prairies, *Silphium laciniatum*, with the exception that in the native plant the polarity is seen chiefly in the large, coarse, radical leaves, a foot or two long, while in the imported weed it is manifested in the stem-leaves.

The plant has many of the qualities which characterize the successful intruder. It has an uncompromising weedy look and wears the expression of a plant that has come to stay. It produces a great abundance of seed, more than eight thousand to a plant of ordinary size, each seed being well protected against the elements and with every facility for distribution, and it will grow and seed in any soil or surroundings. The plant is protected from herbivorous animals and boring insects by its bitter milky juice, and its prickles also have some protective value. Wherever it can maintain life seed will be formed, and if by any accident the stem is cut off, several branches will start from below and bear, perhaps, more seed than the original would have done. But it is annual after all, and when pulled up by the root the whole plant dies. Upon the whole, Professor Arthur does not consider it as dangerous as Professor Morrow and some other authorities do. It will probably be a rival of the Rag Weed, the Cockle Bur, Jimson Weed, Pig Weed and other tall-growing annuals, and will be at home along roadsides and rubbish wherever the ground is not closely covered with sod and fine foliage. Of course, it will do no good for one farmer to prevent its going to seed, so long as his neighbors will allow a million balloons, each carrying a plant, to set sail from adjacent fields. These annual weeds can be kept from cultivated grounds by tillage, and from fence-rows, roadsides and waste ground by hoeing up the roots just before they blossom each year, that is, early in July. In this way they can be kept within bounds. A suitable weed-law in every state would, of course, if it were enforced, greatly help to keep this and similar pests in subjection.

Notes.

A Washington correspondent of *The Florists' Exchange* mentions a showy yellow-flowered *Cosmos* which has been growing on the grounds of the Agricultural Department during the summer. It seems to be quite as floriferous as the plant now known so well, but its flowers are orange-yellow, and the divisions of the deeply cut leaves are broader. The seeds were obtained from Mexico last spring.

Since September 1st 317,763 barrels of apples have reached this market for domestic trade. King apples bring the highest prices, \$3.50 a barrel being asked for the best of this sort, and Baldwins, Northern Spies and Greenings range from \$2.00 to 2.50. More than 1,000,000 barrels of American apples have gone forward to Great Britain since the export season began in September. Prices in English markets two weeks ago ranged from \$2.25 to \$3.25 for Baldwins, \$2.50 to \$3.00 for Greenings and Northern Spies, and \$4.50 to \$7.50 for Newtown Pippins. These prices have since been lowered by the large supply, and Bald-

wins now bring but \$2.00 to \$2.50, while Newtown Pippins are plentiful at \$2.50 to \$5.62.

The death is announced, in his eighty-fourth year, of Monsieur P. Duchartre, the distinguished French botanist. He was the author of a comprehensive and lucid text-book, *Les Elementes Botanique*. He was a careful experimenter and observer and a voluminous writer in physiological botany, and in systematic botany produced, among other papers, classical monographs of the *Aristolochia* and *Lily* families. To horticulturists he is best known as editor of the "Journal of the National Horticultural Society of France."

Florida is now sending to this city new peas, which bring \$1.00 a half-peck, and string beans which cost eighty cents for the same quantity. New peppers, from the same state, are offered at fifty cents a dozen. Chicory and lettuce are coming from New Orleans, and radishes, kale and spinach from Norfolk. Field-grown tomatoes from California cost twenty-five cents a pound, and tomatoes from near-by hothouses forty to fifty cents. Mushrooms are in rather short supply and command \$1.25 a pound. A few shipments of Copenhagen cabbage have been received, for which the low price of \$5.00 for one hundred heads is asked.

The cranberry crop has been severely affected by the prolonged drought of last summer, damage by worms and by early frosts, so that less than 50,000 barrels constitute the output from the Cape Cod region this year, whereas 200,000 barrels were shipped last season. An extreme price last year was \$5.00 a barrel, while cranberries known to the trade as defective are now quoted in the wholesale market reports at the unusual price of \$6.00 to \$8.00 a barrel, and prime and fancy grades range from \$8.50 to \$13.00. As the best berries are especially scarce, even these high prices are likely to advance later in the season.

In discussing the forage problem in the north-western prairie states, Professor Pammel says that, in addition to the various Grasses and leguminous plants, root crops, such as Turnips, Mangolds and Artichokes (*Helianthus tuberosus*), can be planted to advantage even in a dry season. Turnips were planted in Iowa on the 24th of June after a rainfall of two and three-tenths inches, and were cultivated once a week during forty-eight days, during which time no rain fell. The cultivation provided a constant three-inch mulch of earth, and on the 10th of August the roots averaged as large as hens' eggs. After a moderate rainfall in August the crop made a rapid growth of foliage, and many of the roots weighed five pounds each. The untrimmed crop weighed twenty-eight tons to the acre, about four tons of which were leaves, which could be utilized as green forage.

Mr. L. O. Howard, Chief of the Entomological Section of the Department of Agriculture, states that Dr. F. W. Harris was the first entomologist to receive public compensation for his labors in this country. He prepared a catalogue of insects, appended to the geological report of Massachusetts, as early as 1831, which was a work of inestimable value, when we consider the condition of American science at that time. At a later period he was appointed as one of a commission to make a geological and botanical survey of the state, and in this capacity he prepared his now classical *Report on Insects Injurious to Vegetation*, which was published in full in 1841. He reprinted the work under the name of Treatise, instead of Report, in 1842, and again in a revised form in 1852, and the whole sum received by him from the state for his labors was \$175.00. In its present beautiful form, with the wood-engravings which marked an epoch in that art, this work, prepared more than half a century ago, is to-day, perhaps, above all others, the manual of working entomologists in the north-eastern section of this country. After all, it rather strains the facts to classify Dr. Harris as an "official entomologist," and the first scientific man to receive a true commission for the investigation of injurious insects was Dr. Asa Fitch, of New York, the Legislature of that state having made an appropriation in the session of 1853-54 for an examination of insects in an act which authorized the appointment of a suitable person to perform the work. Dr. Asa Fitch was appointed in May, 1854, by the New York State Agricultural Society, which body was authorized to make the selection.

From a report made by Monsieur Daubrée, Director of the French Forest Department, the area of forests managed by the Department and belonging to the state amounts to 2,691,165 acres, while that belonging to the communes and public establishments amounts to 4,738,637 acres, something more than 11,600 square miles altogether, or about one-eighteenth of the

total area of France. The private forests of France contain some 20,800 square miles, so that the entire forest area is fifteen and a half per cent. of the total area of the country. Of the seven and a half million acres of forest managed by the state, rather more than ten per cent. are classed as unproductive or not stocked with trees, and largely consist of waste lands which the state is acquiring constantly to prevent the denudation of the mountains by torrents or the encroachment of sand-dunes. More than half the area of the state forests are under high forest-treatment, and they consist chiefly of productive Silver Fir and Beech forests in the Vosges; forests of Pinus Laricio and Pinus Pinaster in Corsica, which yield only poor returns on account of the frequent forest fires; Beech forests in Normandy, with a small proportion of Oak, and Oak forests on the Loire, where Beech is kept subservient to the principal species. Nearly \$500,000 were spent in 1892 in planting up dangerous mountain-sides and regulating the beds of mountain torrents, while \$40,000 were expended in fixing shifting sands. The cost of maintaining the productive forests for that year was about \$2,000,000, or less than thirty cents an acre, while the average annual yield to the acre is something less than a hundred cubic feet of wood, worth rather more than \$5.00 for firewood and timber.

Farmer's Bulletin No. 21, issued by the United States Department of Agriculture, is a compact little monograph on the value and proper management of barnyard-manure. If the fertilizing constituents of the manure produced by all the farm animals of the United States are estimated at their market value the total amount foots up to the enormous sum of more than two billions of dollars in a year. This estimate does not mean that the manure produced by our farm animals is actually worth that amount of money to the farmers, for much of it is actually thrown away, and much of it is carelessly applied. It means, however, that the phosphoric acid, potash and nitrogen which this product contains would cost that much if it was purchased. It ought to be borne in mind, too, that if this valuation is too high, it takes no account of the use of manure in improving the mechanical condition and the drainage of the soil, which is almost as important as its actual fertilizing value. Professor Roberts, of Cornell University, thinks that \$250.00 is a conservative estimate of the value of the manure produced during seven winter months on a small farm which carries four horses, twenty cows, fifty sheep and ten pigs. At least one-third of this is lost, which would mean for the whole country a waste of nearly \$700,000,000. This little pamphlet of thirty-odd pages gives plain directions for protecting this valuable product from loss by fermentation or by the leaching out of its soluble constituents. It also explains the rational methods of preserving and applying manure, and when taken in connection with Bulletin No. 16 on Leguminous Plants for Green Manuring and Feeding, it ought to prove a real assistance to every intelligent farmer or gardener who will give it an attentive reading.

In summing up some reports on strawberries for the year, Professor Maynard, of the Massachusetts Agricultural College, speaks of Haverland as one of the best for market or home use because of the good size, color and quality of its fruit where the plants are not allowed to grow too closely. The berries are light-colored and soft in matted rows. Marshall seems to be a remarkably vigorous plant, which makes few runners, and bears large berries of perfect form, rich color and good quality. It ripens early, but shows a tendency to leaf-blight. Timbrell is pronounced of better quality than any berry thus far tested. Careful records were kept of the growth of about a hundred and twenty-five varieties, the fruit of which was picked every day and carefully weighed. There are tables which show the size, color, form, quality and firmness of the fruit, with the sex and vigor of the vines, the percentage of winter-killing in each variety, with the date of the first and last picking, all of which seems to be an expenditure of effort which an accomplished horticulturist and trained investigator could use to better purpose in some other direction. The work is of very little value after it is done, because the final test of the usefulness of any variety for any particular place must be made where it is to be planted. Much investigation is needed in the field of horticulture, where the expensive apparatus, the length of time required to conduct the experiments, and the scientific training needed to interpret them are only found at such centres as the agricultural colleges and experiment stations. This indicates the appropriate work for experts properly equipped and paid by the state. It is a waste of energy, which ought to be better employed, for scientists capable of higher work to be doing what every gardener and fruit-grower can do perfectly well for himself.

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Forestry by Proclamation.

WHEN the act "to repeal the timber-culture law and for other purposes" passed Congress just as the session was closing on the 3d of March, 1891, it was not generally understood that the provisions of the bill "for other purposes" were a good deal more important even than those repealing the timber-culture laws, and that one section of the act invested the President with unprecedented power in regard to the future of the public domain. This is the now well-known provision empowering the President to set apart reservations of timber lands, and "to declare by proclamation the establishment of such reservations and the limits thereof." This law marked a distinct departure from the policy of the Government in relation to our public forests, but there is little reason to fear that it will be exercised against the public welfare, for the strongest pressure of local and pecuniary interests brought to bear upon the President will always be against the withdrawal of lands from sale. In less than four years seventeen reservations have already been proclaimed in nine states, and, altogether, they amount to more than 26,500 square miles, an area considerably more than half as large as the entire state of New York. All the selections seem to have been judiciously made; they insure the integrity of much scenery of great natural beauty and sublimity; they save many kinds of great game which are threatened with extinction; they ought to ensure a lasting timber supply in regions where it will be sorely needed, and, most of all, they protect the headwaters of some of our great rivers.

We have often called attention to the negligence of Congress in failing to provide systematic and efficient protection for this vast territory. As it now stands, these seventeen millions of acres have nothing but the President's proclamation to protect them from sheep-herders or timber-thieves, and it is well known that any one can plunder or burn them with little fear of punishment. Every attempt to enact a measure for the safety of these forest reserves has been defeated, and a force strong enough to defeat protective legislation is strong enough to guarantee impunity to trespassers. If there is not enough virtue in Congress to protect the forests

already established, what would be the effect if the President should at once increase them by making proclamation to reserve the land about the headwaters of all our great western rivers wherever such land is now public? Would Congress be impelled to make greater haste in passing laws to protect these lands, or would the opposition to the reservations be increased by enlisting the support of additional local interests which might seem to be threatened?

These inquiries are suggested by an article in the current number of the *Review of Reviews*, by Mr. Robert U. Johnson, who argues that the delay of Congress in providing for the care of reservations does not relieve the President of responsibility for the delay in creating others. He adds:

By one stroke of the pen the President can make a reservation, for instance, at the headwaters of the Missouri, which, without interfering with private rights, shall control for all time for the public the source of that great stream. The country would not fail to greet with favor a well-considered scheme for similar tracts in the entire west. Such action would be an honorable challenge to the patriotism and good sense of Congress, qualities which are never found wanting in a crisis, and the necessary legislation for the patrol and care of these reservations would be all the surer to follow, by reason of the magnitude of the beneficent scheme.

In one of the early issues of this journal it was proposed that Congress should withdraw from sale all forest-land until a commission of competent men should report on their extent and value, and designate such portions as should be forever kept in forest to insure a full and equable water-supply for our great rivers. If this plan had been adopted a scheme would have been formulated long before this, mapping out the permanent forest and giving reasons for the boundaries laid down. It may well be questioned, however, whether under the act of 1891 the President would be justified in any such sweeping proclamation as is now contemplated. The act was not passed with any such object in view, and it is not improbable that such an exercise of power would excite hostility which would ultimately destroy the whole scheme. Forest-protection, though it may come late, will come at last, when there is a thoroughly enlightened public opinion on the subject, which will insist on expressing itself in law. Neither the people nor their representatives can be driven to this wise work by any Presidential proclamation. The logical course is to make sure of protecting what we already have before attempting to take the entire public forest-lands by proclamation. There are certain mountain regions which palpably ought to be reserved, and which the President could at once establish with the approval of almost the whole country. But before any proclamation is made which embraces in its scope the "entire west," there ought to be a great deal of study in selecting locations and fixing boundaries. Under the law a "stroke of the President's pen" establishes the condition of these reservations forever, and surely the word which fixes the boundaries of the nation's forests and makes them permanent and final, ought not to be hastily written or spoken.

As soon as possible after the falling of the leaves the professional tree trimmer begins to practice his rude surgery on street-trees, and he keeps it up as long as he can find remunerative employment. Almost exactly two years ago a row of fine Norway Maples, standing in a neighboring city, were mutilated in this way beyond all hope of recovery, and hardly two blocks from the remains of these trees a butchery of the same sort is going on as we write. These professionals approach the owner of some city lots, and their elaborate apparatus of ladders, ropes and saws impress him with a sense of their superiority as experts in their art. The man himself knows nothing about trees, and, probably, cannot even give the correct name of a single tree which stands in front of his door, and he is easily persuaded that, unless his trees are pruned, they will soon die, or be worthless. What these journeymen do to a young thrifty tree is to cut off all its large limbs to

within three or four feet of the point where they separate from the trunk, and then the branches still remaining on these limbs are sawed off so as to leave stubs a few inches long. The result is, that what was once a Norway Maple, for example, with a symmetrical top and a trunk some twelve or fifteen inches in diameter, is left a mutilated stump, with a score of raw wounds to invite spores of fungi of various kinds, which will certainly kill the tree in time. It will linger on a few years, an unsightly and misshapen object, ruined by the mistaken kindness of persons whose purpose was to add to its beauty and insure its longevity.

Now, no trees need systematic pruning as much as street-trees. They need to be kept to a certain shape, and in many cases they ought never to be allowed to grow beyond a certain size. But street-trees will never be pruned properly unless the men who do the work are directed by some one with knowledge and experience. It is of little avail to complain that this work is done badly so long as every man is permitted to treat the trees in front of his own lots as he chooses, for it is too much to hope that the great mass of the dwellers in our cities will ever know enough about trees and their habits to care for them properly. The only safe course, as we have insisted before, is to place the street-trees of every city and town under the charge of some competent official. We mean by this not only that some man should be named to superintend the pruning, but that the whole work of planting and subsequent care should be put under his control. This official should not only know enough to select the proper varieties, but he should know how to plant the trees so that they will make an even and symmetrical growth, and how to keep them properly pruned and protected from the attacks of disease and insects and animals. But the care should begin still farther back, that is in the nursery itself, and if there were a competent commission in every city as there is in Washington, to conduct the nursery, it would be all the better. Every one of a row of street-trees should be a perfect specimen, and all should be of uniform size and shape. If a city controlled its own nurseries this essential could be more easily secured. But, in any case, no street-tree should be planted until it has passed the most rigid inspection. Even if the work has been done in the best manner possible from the very beginning, the trees in the city will need constant supervision as they grow. They are surrounded by a hundred dangers here which never threaten them in the open country. But, after all, they have no more dangerous enemy than the men who have equipped themselves to prune them by the job, for they come in the garb of protectors, and the ignorant and unwary are actually induced to pay them for destroying what they profess to save.

Imagination in Gardening.

THERE is no doubt that in our day landscape-gardening is occasionally carried to a greater degree of perfection than ever before. The great park systems of some of our cities are without rivals in the Old World, and there are private grounds here where true artistic feeling in composition is expressed by most exquisite arrangements, and a truly artistic sense of the requirements of the situation. But there is a question whether most of the private gardens nowadays are constructed with the same sense of the picturesque which used to make English gardens the expression of their owners' individuality. Those gardens were, and, no doubt, often still are, whimsical, but they meant something; and even their mistakes showed a healthy sort of interest in the subject, and in the disposition of their treasures there was a care beyond what is mechanical and perfunctory, and something better than a mere imitation of their neighbors.

Italian gardens, with all their formality, still retain that imaginative charm. There is an expression of stateliness, of mystery, of classic grace about them that makes the

forlornest of them interesting to this day. The mossy fountains crumbling to decay, the rows of feathery Cypresses, the cool thickets of Ilex, in which the nightingales sing even at noonday, the resting-places from which are glimpses of scenery, all suggest the planning of those pleasure-grounds by and for those who were true lovers of nature, and to whom the garden was a frequent resort and a continuous joy. The same is true of French gardens, where the imagination is governed by the restraints of that Gallic taste which pervades most things of a decorative kind constructed by that keenly perceptive people. Even the Dutch gardens are expressive, if not of the imagination of the Netherlands, at least of their most marked characteristics—orderliness, practicality, straightforwardness and simplicity.

In England there may be a want of taste, but never a lack of imagination, and here we have constant evidence of the delight taken by men of eminence in statecraft and letters in the construction of ingenious gardens, which were intended at least to express their owners' ideas of the picturesque. Queer enough some of those ideas may have been, and, where the wealth of the proprietor permitted, imagination too often ran riot and admitted monstrosities into the scheme; but at bottom, the idea that a garden should be an individual expression, even of an owner's whim, was not a bad one, since through reckless experiment one sometimes arrives at a great truth. Certainly it was a thousand times more hopeful a symptom than the senseless repetition and imitation from which one suffers in many would-be magnificent places in our own country. In the grotesque conceptions of the eighteenth century there was at least a struggling idea, while in the monotonous and constantly recurring arrangements which we too often see now, no idea whatever enters, except to be conventional.

It is possible that the lack of a leisure class in this country may account for a good deal of this monotony in our large places. Still there are more men here than one would suspect who care something about gardens, and who are willing to give them some time and attention. But this interest rarely becomes strong enough to excite any original thinking, and comparatively few men have any conception that there is such a thing as a possible picture in every plot of ground, with a definite meaning in the mind of its creator. In Europe there is a certain traditional art in planting which has descended through succeeding ages, and some of this came to these shores with our forefathers, so that the early gardens of America bore its impression more than do those of the present day, which for the most part are mere collections of more or less curious and beautiful plants. It was the element of fancy which made the old gardens beautiful and dear, so that to this day they retain their charm, even if their fashion has passed away. They exhale the aroma of the imagination which created them and so retain a perennial hold upon us. Even the grottoes and the statues which we now condemn seem no more out of place in an eighteenth-century garden than the quaintnesses in the literary style of the epoch. The essential thing is to have some ideal and some mode of expressing it, a style which is our own and not that of our fathers or grandfathers—and, above all, not that of our neighbors. When we once have a style the perfecting of it is but a matter of time and study and adaptation to our changing circumstances.

The genius of Lord Bacon did not disdain to concern itself with the reformation of national taste in England in the matter of gardens, and he wisely suggested winter or evergreen gardens, and the preservation of rude and neglected spots as specimens of wild nature, and though in his day that suggestion did not bear much fruit, it, no doubt, opened the minds of his readers to new light upon this important topic; so that when in the reign of Charles the Second the genius of Le Nôtre began to make itself felt in France, there were thinking men in England ready to comprehend his rare ability, and the King himself sum-

moned him to lay out Greenwich and St. James Parks. Charles also added the semicircle to Wolsey's Hampton Court, so stately to this day with its broad terraces and fountains and gay parterres of flowers; and in his reign the gentle Evelyn gave a tremendous impulse to picturesque gardening by his own work, and by his appreciation of what was being done by kindred spirits about him. "Two mummies and a grot," which he found at Bushnell's Wells, at Enstone, scarcely correspond to modern ideas of garden decoration, but here the proprietor "lay in a hammock like an Indian," and doubtless allowed his imagination free rein.

Then, with the arrival of the Dutch King, came the gates and rails of wrought iron and the clipped Yews and vegetable sculpture of the period. Sir William Temple's idea of a perfect garden was a flat or gentle declivity of an oblong shape lying in front of the house, with a descent of steps from a terrace extending the whole length of the house, this inclosure cultivated as a kitchen-garden and orchard; but this idea was viewed with contempt by such an enlightened observer as Lord Walpole, and soon the vegetables gave place to lawn and trees. Queen Caroline gave a still further impulse to the natural style, and winding waters were introduced into the scheme of Kensington Gardens. Pope and Addison ridiculed the formalities and clippings of their day, and little by little the emancipation of taste in England grew general. Pictures were studied by some to gain an idea of suitable composition; shrubberies were introduced, with winding walks along their borders; points of view were developed; some even went so far as to make their scenes emblematical of pastoral poetry, and even sentimental farms were attempted. Shenstone is said to have ruined himself in gardening at Leasowes, and broke his heart over his disappointments, and the echo of his taste is caught in his verse. Then came Kent, the landscape artist, who planned "Elysian scenes," shading in his more finished pieces with evergreens, and his successor, Wright, whose ideas were afterward developed by Beckford at Fonthill Abbey. Such was the craving for the improvement of grounds in England in the eighteenth century that there were not artists enough to direct the movement. It was by the exercise of imagination that English landscape-gardening progressed, now advancing and now retrograding, until it has come to stand as a synonym for what is picturesque and individual.

In our own country, young as it still is, there are splendid flashes of inspiration in this direction, which give promise of a time when our gardens will be in some adequate way an expression of the genius of the republic. Great object-lessons, like Central Park, the Boston Metropolitan Park system, the Columbian Exposition, and other realizations of a poet's dream, cannot fail to leave their effect upon a community. All great work in any art prompts individuals to original thought, and we need to give more rein to fancy in our own home arrangements, to think out for ourselves some scheme to be developed at leisure, and to profit by all such help as is offered by triumphs of landscape-art or the example of Nature in her most favorable moments.

It is far easier to fall into the mechanical than to rise to the imaginative style, and yet the latter, once attained, appeals so directly even to the uninstructed eye that it proves its right to a place among the fine arts. The same laws which govern composition of all kinds here are paramount and are equally imperative in literature, in painting and in landscape-effects. Simplicity, purpose, restraint, economy of means are the guiding principles of great art wherever it is to be found. If there is no meaning in what is done it soon grows wearisome. The commanding quality of the human mind is high imagination; this alone is not outworn by ephemeral fashions, and a great park which is born of such an inspiration will never cease to make appeal to our nobler faculties, and even a modest garden, if it expresses the best thought of its creator, will have a refining influence upon all who come under its spell.

Hingham, Mass.

M. C. R.

The Box-elder and the Russian Mulberry.

IN traveling over the western plains it is observed that these two rapid-growing shade-makers are of the highest value for forest-planting, if each is kept in its appropriate latitude. Throughout Kansas, and more particularly east of the ninety-ninth meridian, the Russian Mulberry must become one of the most useful trees that grow, and this utility decreases rapidly as we go northward. In the southern counties of South Dakota it is worthless; whereas in the cold uplands of North Dakota the Box-elder is one of the hardiest of trees, and succeeds all over South Dakota and the greater part of Nebraska, but in Kansas, even toward its northern boundary, the Box-elder does less well, and on its southern border it is worthless.

The two trees have the two valuable qualities of rapid growth during youth and comparatively great shade endurance, and they are thus peculiarly fit for the important position of nurse-trees to species that demand more light. When planted with such species the Box-elder and Mulberry force them to grow tall and straight, with clean shafts.

At the South Dakota Agricultural College the Box-elder has been used as the dominant species in all successful plats but one, which was composed of hardwoods exclusively. In a plat of Box-elder with plants standing four feet apart each way, with every fourth tree a Burr Oak, the conditions at the end of the third year from planting approached those of an old forest. The Box-elder (five years from seed) formed a complete shade, and the young Oaks were completely overtopped by them. At the end of the fifth year from planting the Oaks had begun reaching up to the leaf-cover to get their share of light, the Box-elders now averaging fourteen feet high, the Oaks four feet, the tallest being eight feet two inches. It begins to look as if the lateral branches of the Box-elders that immediately surround the Oaks should be lopped; but the Oak has much shade endurance while young, and it may be able to overcome the Box-elder without assistance.

In mixtures of Box-elder, White Elm and Green Ash at this station, with the Box-elder dominant, the Elm at the end of five years begins to overtop the Box-elder a little, but the Ash hardly averages as high by a foot. Compared with pure Ash, those in this plat are fully two feet taller, the increased height being caused by the Ash reaching up for light between the dense shading Box-elders. The Ash is a light-demanding tree, and so is the Elm.

In a mixture of Box-elder, White Pine and White Birch, the Box-elder is not useful, as in five years it has so overtopped the Birch as to have suppressed and killed it. The White Pine was a failure.

An attempt was made in one plat to alternate *Populus Cerrifolia*, a Russian Poplar, with Box-elder as dominant forms mixed with Elm and Ash. The Poplar failed; the Ash and Elm, not growing as rapidly nor as dense as the Box-elder, did not shade the ground, so that weeds and grass have sprung up and the mixture is a failure. This plat is valuable as illustrating the necessity of making the greatest proportion of the plat good dense shade making kinds.

There is no other place in the west, so far as I know, where systematic attempts at mixed planting have been made, and hence no place is known where the Russian Mulberry has been used as a nurse-tree. In Brookings it forms a shrub that kills back badly every winter, but in Hutchinson, Kansas, specimens were seen which had grown from seed planted seventeen years ago, and they are now ten inches in diameter three feet from the ground and forty feet high. The pure plats of this tree prove it a dense shade-maker. From this it is inferred that in Kansas it will prove quite as useful as a nurse-tree as the Box-elder has proved in South Dakota. Good specimens of it were found in all parts of Kansas, and throughout Nebraska south of the sand hills, and in irrigated land near Denver, Colorado.

Washington.

Charles A. Keffer.

Foreign Correspondence.

London Letter.

ORCHIDS and Chrysanthemums are the principal attractions in the indoor garden at this time of year. Outside there is nothing except berries of various kinds, a few late autumn-tinted leaves and here and there a straggling Rose or Chrysanthemum. There is, however, one shrub of exceptional interest now, namely, *Pernettya mucronata*, and its varieties: We have two large beds of them in a conspicuous place on a lawn, and they are now heavily laden with berries of the most vivid colors—crimson, magenta, red, pink, violet, china blue and creamy white. This year they are better than I have ever seen them at Kew. Some well-berried branches of them were exhibited last week and they attracted a good deal of attention.

In my last letter I noted the best of the Chrysanthemums shown at the Drill Hall. In this I will describe some of the best of the Orchids which formed a feature at the same meeting of the Royal Horticultural Society:

EPILELIA HARDYANA.—A bigeneric hybrid was shown under this name last week by Messrs. Sander & Co., who have raised it from *Lælia anceps* crossed with *Epidendrum ciliare*. It will have an interest for systematic botanists, as it proves the near relationship of *Epidendrum* to *Lælia*, and, of course, to *Cattleya* also. Indeed, Reichenbach did once merge *Cattleya* in *Epidendrum*.—The present subdivision has its advantages horticulturally, but it is as well that we should recognize the fact of the near consanguinity of *Lælia* to *Epidendrum*. As a garden Orchid, Messrs. Sanders' new hybrid is no great gain. It is more attractive than the *Epidendrum*, less so than the *Lælia*. The pseudo-bulbs are cylindrical, two-leaved, and the scape is erect, six inches long, with two flowers, each four inches across and formed of narrow spreading segments colored pale rose, with a tinge of buff. The lip is pale rose and folded over the column with a small wavy front lobe colored rich amethyst-purple.

ONCIDIUM WHEATLEYANUM.—This new species was described in *The Garden* last year by the late Mr. W. H. Gower from a plant flowered by Mr. F. Wheatley, of Teignmouth, who had purchased it for *Oncidium Gardneri*. Last week Mr. Wheatley sent it to the meeting of the Royal Horticultural Society, where it was recognized as a distinct and beautiful Orchid, in the way of *O. Gardneri*. In general characters it resembles the last named species; the flowers, of which there are about thirty thickly set upon the spike, are each nearly two inches across, with ovate sepals, obovate wavy petals and a broad bilobed lip. The sepals and petals are colored a uniform bright chocolate-crimson; the lip is golden yellow margined with crimson, and there is a large blotch of velvety maroon spreading over the whole claw, the basal auricles being yellow. It is to be hoped that collectors will be able to find this plant in quantity, as it is a beautiful *Oncidium*, quite as beautiful as the rare *O. Gardneri*, which was first introduced from the Organ Mountains in 1846.

CATASETUM BUNGEROTHII.—The range of variation in this species is extraordinary. It is one of the largest-flowered and one of the handsomest of the many species of *Catasetum* now known, and since its introduction, some ten years ago, it has been the means of turning the attention of cultivators and collectors to this remarkable and interesting, but previously neglected, genus. Messrs. Linden, who have already figured and described in *Lindenia* several well-marked varieties of it, exhibited in London last week a group of splendidly flowered specimens which was truly astonishing to connoisseurs. Fully a dozen distinct forms were represented from the type, with its large, shell-like, creamy yellow lip three inches across, to others which in structure suggested the old *C. macrocarpum*. There were white, yellow, purple-tinged, red-spotted, green-tinged flowers among them, and some of the spikes bore a dozen flowers. The pick of them were named *Lindeni*, *splendens*

regale, *Luciani*, *aurantiacum* and *O'Brienianum*. The species is a native of Venezuela.

CYMBIDIUM CYPERIFOLIUM.—A plant of this rare species was shown in flower last week by Mr. R. I. Measures, and obtained an award of merit. It is an ally of *C. longifolium*, and is characterized by linear, arching, bright green leaves two feet long, and a scape eighteen inches long bearing five flowers, each three inches across, with curved sepals and petals colored pale green, with red-brown lines, the lip being ivory-white, with dark crimson spots on the front lobe, and crimson parallel lines on the inside of the side lobes. Although described many years ago by Wallich, and apparently common in the subtropical regions of the Himalaya, it has somehow been missed by collectors, the only plant I remember of having ever seen being one at St. Albans a few years ago. Possibly this is the same plant. It is an Orchid worth popularizing, being elegant in foliage as well as attractive in flower, and it will, no doubt, be as easy to cultivate as its useful, good-natured relation, *C. Lowianum*, etc.

CATLEYA LABIATA ELEGANS.—This is a distinct addition to the numerous named varieties of this *Cattleya*. It has flowers of medium size, good in substance, ivory-white, with a dark purple lip margined with white. In effect it is not unlike the charming *C. Rex*. It was shown last week by a Cheshire amateur. There are many thousands of plants of *C. labiata* in flower now in the neighborhood of London alone. At Clapton, St. Albans and Chelsea the display made by its large richly colored blooms is a sight that would astonish Orchid-growers of a decade ago, whose houses in November were almost devoid of flowers. This *Cattleya* fills a large gap in the cooler houses, while in the warm house the queenly *Dendrobium Phalaenopsis* plays an equally valuable part. These two Orchids should be in every garden where there are glass houses, whether Orchids generally are in favor or not.

ODONTOGLOSSUM CRISPUM F. MASEREEL.—Flowers of this extraordinary variety were shown last week in London by Messrs. Vervaeke & Co., Ghent, and easily obtained a first-class certificate. It differs from all other named forms of this most variable Orchid in the color of its flowers, which have a groundwork of gray-white covered all over with large blotches of chocolate-red. The edges of the segments are very crisp, and there is a conspicuous blotch of yellow on the disk of the labellum. It is one of those Orchids which sell for sensational prices whenever they come into the market.

PESCATOREAS.—Messrs. F. Sander & Co. are exceptionally successful in the cultivation of these plants, and they have a good collection of them in flower now, *Pescatorea Dayana*, *P. Lehmanni* and *P. Klabochorum* among them. The secret of their success is, so the cultivator told me, a shaded position in a hot moist stove, looseness at the roots, which revel in fresh sphagnum, and plenty of water always. "Water, water, water; that is the chief thing."

London.

W. Watson.

Plant Notes.

The Garry Oak.

THIS Oak, *Quercus Garryana*, is a native of the Pacific slope, and reaches its greatest perfection in Oregon and Washington. It ranges through a wide territory, from the dry hillsides of the Cascade region, where it becomes more or less scrubby, to the wet bottom-lands of the region to the west.

The tree varies widely in form and habit, and the illustration (see page 495) shows what may be regarded as a good type, although there may be room for difference of opinion as to this. One frequently finds specimens, grown out in the open for a long time, with a very symmetrical, rounded form. But if, after arriving at a good age, a growth of Douglas Spruce springs up, the lower branches, being robbed of the light, will die and rot, leav-

ing what Professor Rothrock has called a broom-like top. This top will save the tree if the surrounding growth is not left too long, that is, not more than forty to forty-five years. If now the earlier conditions are restored, the branches become more or less pendulous giving the tree something of the appearance of the Elm. Such a tree is the subject of the illustration.

acute or obtuse, and in their shape fully agree with the popular idea of the Oak leaf. They are dark green and thick. The branchlets are rusty, with a close pubescence, and bear, when fruiting, one, or usually two or three, acorns three-quarters to one and a quarter inches long, and from five-eighths to seven-eighths of an inch in diameter, with a bloom. The cups, which are shallow, are more or less



Fig. 78.—*Quercus Garryana*, the Garry Oak, in Oregon.—See page 494.

The bark is light gray, longitudinally, but not deeply, furrowed. The ridges thus formed are scarcely an inch broad, and are either not at all or, more commonly, irregularly furrowed transversely. It sometimes occurs that the transverse furrows are so regular and frequent as to give the bark a regular checker-board appearance.

The leaves are from two to six inches long. The lobes

tubercled, sessile, or sometimes raised on a stalk about three-quarters of an inch long.

The wood has a beautiful grain, and is very valuable for interior finishing. It is said, however, that in drying it becomes brittle, and it is very liable to check badly. Only the greatest care in drying for a long period, two years at least, will obviate this fault.

The tree in the illustration is thirty-three inches in diameter and about seventy feet tall, a medium-sized individual.

Pacific University, Oregon.

Francis Ernest Lloyd.

QUERCUS IMBRICARIA.—The Shingle Oak, like most other Oaks, is rarely seen in cultivation, although it is perfectly hardy in this latitude. To the ordinary observer its oblong lanceolate leaves give little suggestion that it is an Oak, and, in fact, they bear a strong resemblance to those of the Laurel-leaved Willow. It likes strong soil, and in rich woodlands it not uncommonly approaches one hundred feet in height. When growing in the open ground, however, the branches of young trees have a droop somewhat like those of Pin Oak, and this gives it a graceful expression which is not found in most other species of the genus, which are rather dignified and strong than graceful. Mr. Joseph Meehan writes that the plants in Germantown from seed gathered near St. Louis are making a fine growth, and they excite much attention for their elegance of form and the shining beauty of their leaves. Like many other Oaks, this tree should be pruned back hard when it is transplanted, and the removal of trees ten or twelve feet high would be much more certain to be successful if the roots were pruned a year or two in advance by digging a trench in a circle about the tree and filling it in with good soil, to be occupied by new roots in place of the large ones which had been cut off. This Oak is often called the Laurel Oak, a name which properly belongs to *Quercus laurifolia*, a beautiful southern species.

HYPERICUM MOSERIANUM.—Although this beautiful hybrid *Hypericum* has not proved perfectly hardy here in exposed places, it will be found to winter well in sheltered positions when protected with a light covering of dry litter. During severe winters it may be cut down to the ground, but it will begin to grow again in early spring with the greatest freedom. It gives a profusion of bloom during the summer and autumn months, and is undoubtedly one of the best of all *Hypericums*. It is shrubby and grows about two feet high; the flowers are three inches in diameter and are of a beautiful clear yellow color. It is easily propagated by cuttings made during early autumn and placed in a shady frame. It thrives best in a rather moist soil. This valuable plant was raised several years ago by Monsieur Moses, of Versailles, by crossing *H. calycinum* with the Japanese *H. patulum*.

BEGONIA CORRALINA.—Under this name the largest of the shrubby *Begonias*, probably a variety of *B. maculata*, has long been known in English nurseries. In this country it has been oftener called *B. rubra*. Its principal variation from the type is seen in the leaves, which, in old plants, show none of the characteristic white spots, although these spots sometimes appear in the seedlings, neither has it the crimson-purple coloring on the under side of the foliage; the wings of the capsule are also nearly equal. It is a plant of luxuriant growth, with fine, bold foliage, and produces bright cherry-red flowers in the greatest profusion the year round. It grows well in large pots, but the best position is a border in the warm greenhouse, where it may be used to cover a wall or gable. The strong growths shoot up from the base of the plant like a Bamboo, and their height is only limited by the head-room. They branch naturally after attaining a certain size, but can be pinched in at any time. After the plant has become well established some of the older stems should be removed in spring, to make room for fresh growths. A rich mixture of rotted sod, leaf-mold and well-decayed manure, with a dash of sharp sand, is the most satisfactory soil for the plant. Its propagation is by seeds or cuttings of the stem, the latter method being preferable where a good variety is obtained.

IRIS VARTANI.—This plant flowers naturally at this time. While it is hardy here and will sometimes flower in the open under mild conditions, these are exceptional in December, and it is more successfully grown under protection. It is a bulbous *Iris* with netted white coats, from the vicinity

of Nazareth. It has also the four-sided leaves, with horny points like those of *Iris reticulata*, but is distinct from this in the form of the flower. The flower appears when the leaves are three or four inches high and it is some three or four inches in diameter or spread, with a long tube. The falls have wide oval blades and narrow claws. Professor Forster dismisses this *Iris* very curtly in his *Bulbous Irises* as having a color of no great merit. This seems a hasty conclusion, as it is actually a flower of much beauty. Its general effect is light lavender-blue, produced by fine confluent lines of this color on a creamy white ground. An interesting feature of the coloring is the creamy buff ground of the under or outer sides of the blades. Professor Forster has also observed that this flower has no odor. Specimens sent to this office by Mr. Gerard are pleasingly fragrant, but this is not a material point, for flowers appearing in cold weather in the open border might be apparently scentless, as is the case with those of *I. reticulata* and others under these circumstances. Altogether this is a good plant for all who fancy out-of-the-way flowers and are willing to take the care required to properly ripen up the bulbs during the dark season. After flowering they should be kept growing in full light as long as possible. After the foliage dies down the bulbs may be taken up, kept in a dry place and replanted in early autumn.

Cultural Department.

The Early Bearing of Orchard-trees.

IN the eleventh annual report of the New York Agricultural Experiment Station it is stated: "With trees planted in the Station orchards when two or three years old, the first specimens of fruit have seldom been produced in less than eight years." The trial has covered a very large number of varieties of Apples, mostly of standard varieties, but including some "ironclads" of native origin, and a few of Russian origin. I think it would be interesting to contrast this experience with my own in an orchard of six hundred trees, about half of which were planted in the spring of 1889, and the remainder in the fall of 1890. Those first planted were a mixed lot of nursery-trees (all Russian sorts), three years old from the root-graft; and the second lot, nearly all of the Wealthy Apple. It will be observed that practically these plantings were two years apart—the second lot being set out in the fall of the second year, four years ago.

Now for their bearing. In 1893 the Duchess of Oldenburgh trees, Yellow Transparents and Longfields matured from one or two up to twenty or more of perfectly well-grown fruits. There was also, here and there, a fruit or two on Tetofsky and Wealthy trees, although the latter were only planted out the previous fall. All of the land was plowed, but no manure was applied at the time of setting. The two previous years it had carried crops of Corn and Potatoes. The soil is gravelly loam, underlaid with hard brick-clay at a depth of about two feet, the property being an old dairy-farm, two miles east of Lake Memphremagog, and at least five hundred feet above its level. Between the rows, for the past two years, good crops of Potatoes and Beans have been grown, with clean culture. The trees set latest have fully doubled their diameter, and those set first have grown much more. Very few of those first set are less than eight feet high, while even the smallest trees among the Wealthys measure nearly seven feet. The latter set quite full of fruit last spring, and an attempt was made to shake it all off, but over a barrel was gathered in the fall.

Of the older setting in this orchard the Oldenburghs were heavily thinned, yet they matured about two dozen apples to a tree. The Yellow Transparents gave an average of half a bushel to the tree, after heavy thinning; while the Russian "Longfields" (twenty-four trees) ripened between six and seven barrels, although subjected to several severe thinnings. Nor was any of this at the expense of proper wood-growth. On the contrary, the trees have apparently doubled in size the past season. Aside from the purposely stripped Wealthys, every tree produced heavily. Some forty Russian Plum and Cherry trees, from Professor Budd, of Iowa, three and four years planted in this orchard, produced more fruit than a family of seven could use, and a little of it was sold.

I send these notes mainly to show the combination of vigor and precocity of these Russian tree-fruits as compared with standard Apples in the orchards at Geneva. I have no Apples

of western Europe, or their American seedlings, to compare them with, for the simple reason that they will not endure our severest winters.

Newport, Vt.

T. H. Hoskins.

[We have received photographs taken from several positions in these orchards, and they fully establish the correctness of Dr. Hoskins' statements as to the size, vigor and productiveness of these young trees.—Ed.]

The Ferrocyanide Test for Bordeaux Mixture.

IN the issue of GARDEN AND FOREST for November 14th, Mr. Lodeman, of Cornell University, reports a rusty appearance of apples and pears sprayed with Bordeaux mixture made by the ferrocyanide test. I wish to add my belief to that expressed by Mr. Lodeman that the mixture made by this method should be more carefully tested, at least, before it is recommended for use in orchards. I have given it a thorough trial in spraying Potatoes, and have seen no injury whatever resulting from very heavy applications of it, and have, therefore, no hesitation in sanctioning its use in the Potato-field. As used this past season in our orchards, however, it did cause some injury of the nature described by Mr. Lodeman, so that some of the fruit dropped from sprayed Pear-trees in June, and both apples and pears showed some rusty or russeted appearance. We were able to trace this trouble largely to a single application—the first one made after the fall of the blossoms, when the young fruit was setting. The fruit showed signs of the injury within a few days after the application was made. Moreover, this application was omitted on one tree, and, although the tree was sprayed both before and after this time exactly as were the others, the fruit upon it was almost free from these blemishes. A further interesting indication of the same fact lay in the location of the rusty appearance. In most of the apples it formed a zone about midway between stem and blossom ends. The smooth skin on either side of this zone was evidently that which developed after this early application, and it remained unaffected by the later sprayings, although they were equally thorough. So far as can be judged from Mr. Lodeman's article, the injuries he reports came largely from the applications made at about this period. I would, therefore, suggest that especial care be taken not to use too strong or too liberal a spray just as the young fruit is forming. I trust, however, that these notes will not deter any one from using Bordeaux mixture on his fruit-trees. The scab fungus was much less injurious than usual upon both our apples and pears this year, yet, even under these conditions, the value of the crop from some varieties of our Apples was nearly doubled by spraying. The results upon Flemish Beauty pears were even more gratifying. Upon the unsprayed trees every pear was scabby, less than one-half of them could be rated as No. 1, and these were of inferior quality. On the sprayed trees scarcely a scabby pear could be found; on the average only six pears per barrel were sorted out as not being No. 1. Moreover, this No. 1 fruit was so much superior to the No. 1 fruit of the unsprayed trees that a practical fruit buyer offered fifty per cent. more by the barrel for the former than for the latter.

Vermont Experiment Station.

L. R. Jones.

The Cultivation of Strawberries.

A BULLETIN which has just been issued by the Ohio Agricultural Experiment Station contains some excellent cultural directions as to selection and preparation of the soil, time and method of setting the plants, and other details in which novices, and many who are not novices, need instruction. We give in a condensed form some of the directions on a few points which are less frequently discussed than others:

Most varieties of Strawberries fruit more abundantly the second season than the first, and the berries are correspondingly smaller. For home use it is not a matter of importance as to the length of time a bed is kept, but for market there is seldom any profit in keeping a bed of any of the prolific medium-sized sorts more than one season. It usually costs less to plant a new bed than to clean out an old one, and it is much easier to keep a new bed clean. The earliest berries came from old beds, but they are smaller, and the fact that they are nurseries for insects and diseases condemns them. In treating an old bed many practical growers mow the tops off the plants and burn over the bed when they are dry. This is the best possible way of checking rust. Straw and leaves used as

mulch should be raked into the centre of the rows before burning when there is danger of injuring the plants by too great heat. After burning, the ground between the rows should be kept thoroughly worked.

Winter protection should be given, not to keep the plants from freezing, but to prevent them from heaving and to retain moisture in summer and to keep the berries clean. Early winter is the best time to apply it. Straw is objectionable because of grain and weed seeds, which it contains. The best material is marsh hay, which is free from foul seed and is not easily blown off. It is not advisable to remove this mulch in spring either to avoid early frost or to cultivate, unless the bed is very weedy.

The proper proportion of perfect and pistillate flowered sorts to plant is an open question. Varieties and seasons have, perhaps, much to do with the matter, and no definite rules can as yet be given. One of the pollen-bearing sorts in every five plants is usually sufficient, and it is well to mate the two classes as to time of blooming, color, size and firmness of fruit as nearly as possible. The most prolific sorts are found among those which have imperfect flowers, although many of this class are not prolific. The best of the imperfect-flowered varieties are better than the best perfect-flowered varieties as to prolificacy, as to freedom from disease and general reliability. Many perfect-flowered kinds bloom as freely and set as many berries as any of the other class, but they are more apt to succumb to drought and unfavorable influences—that is, they are not so likely to carry a crop through to perfection as those that bear no pollen. This fact is so well understood that the general custom is to plant as few as possible of the perfect-flowered kinds, and the numerous inquiries after reliable varieties of this class show that something better than we now have is wanting.

The Cultivation of Violets.

VIOLETS grown entirely in cold frames will now require considerable care to insure a supply of flowers during the winter months. If leaves have not already been packed about the frames for additional protection, this should be done at once. A litter of manure, straw or hay affords fairly good protection, but none of these keep out cold as well as leaves, and they are all less tidy-looking. If a frame is properly packed with leaves and protected with mats and shutters a temperature of zero or lower can easily be resisted. Instead of straw mats we use those made of Singapore-fibre. They cost but little more than the straw mats, are slightly heavier, and far more durable. They are impervious to moisture, and mice do not gnaw and destroy them. The mats we have used for three winters are but little worse for wear, and cared for properly should last eight to ten years. Snow should not be allowed to remain over the panes longer than twenty-four hours at a time if it can possibly be avoided; the plants need all the light and air they can get during the dark months, and if the frames are covered over for a week or ten days at a time the plants suffer greatly. Mold will quickly spread among the crowns and the leaves become weak and spindling. The plants ought to be picked over once a week, and any diseased or decaying foliage removed. If any green slime appears on the surface of the beds it should be scratched over.

The Lady Hume Campbell Violets are entirely free from spot this season, and this variety seems equally clean in other places. It does not, however, bloom as freely as the Marie Louise at this season of the year, and the flowers, while of good size, are somewhat paler in color than those of Marie Louise. Swanley White is also free from spot, but we have had some little trouble with this disease on Marie Louise, and especially on lifted plants. The plants grown in frames during the summer have made the most vigorous and the healthiest plants. As a remedy for spot we have used Fir-tree oil once a week with good results. A small handful of salt is mixed in each twelve-quart can of the Fir-tree oil mixture, and the application is made about midday, while the sun is shining full on the plants.

We find that our plants at this season dry out sufficiently to take a moderate watering once a fortnight, but they will need less water from now until the end of January. The water should be tepid, and should not be poured into the crown. The watering should be done early enough in the day for the foliage to become quite dry before nightfall, and air should be admitted on every favorable opportunity. It is better to ventilate even when the outside temperature is several degrees below freezing point, if the sun shines on the frame, than to keep the frame closed, and run up the temperature with an idea of forcing the blooms.

Taunton, Mass.

W. N. Craig.

December Notes.

THE last *Crocus* has but lately disappeared from the garden, which now shows life only in the progressive foliage of early spring-flowering plants. December is the month in which the amateur gardener can secure his most perfect rest, even if there be a greenhouse to care for. If this house is a small one it requires little attention, when many plants move very slowly under the dull skies and short days of the season. Low fires and plentiful supplies of air save much work under glass. Evaporation is slow and insects do not increase very fast, and a few moments' work after breakfast suffices to keep plants in fair order. It does not seem to me that the pursuit of pleasure should commence before breakfast.

The prompt replies to my request for cultural details of *Gloriosa superba* (see page 426) interested me very much, not only by the information, so clearly conveyed, but because it was an instance of the differing conditions under which flower-growers are working in various sections. Here is a plant which makes great tubers in the open in Florida, and requires a tropical stove in Massachusetts. Surely we are justified in trying more than one treatment to any single plant, and the rule of "supplying natural conditions" does not invariably give best results. Why should they? Have we not often found that foreign weeds which have become naturalized here grow stronger than they do at home?

When one opens wide the greenhouse ventilators in late May, and only closes them again in September, I fear that the plants which require niceties of treatment must suffer. It is in such cases that we amateurs are constrained and forced to be content with inferior or uncertain results. Summer-growing tropical plants are always uncertain under my system of free ventilation, yet there will always be some successes in our collections. This season the *Calanthes* are doing well, though the *Gloriosas*, which I suppose require about the same temperature, have failed.

During this month one can keep the greenhouse gay with Paper-white Narcissus, Roman Hyacinths, Freesias, which do not require much urging, and there will always be stray plants in flower, and the list of these will increase as the days lengthen and a higher temperature is maintained.

Elizabeth, N. J.

J. N. G.

Late Chrysanthemums.—Philadelphia growers have found Mont Blanc one of the very best late white Chrysanthemums for profit. Of the pink varieties Mrs. Charles Dissel has not yet been surpassed by any of its color. Eva Hoyt continues among the most satisfactory of the late yellow kinds, and my judgment is that it will not be superseded soon. All these plants have been in cultivation for many years, but they hold their ground well. Last year the variety Challenge was sent out by Messrs. E. G. Hill & Co., and it gave promise of taking the lead among late yellow plants. It is a noble flower of first-rate color, and is very late, but it has the bad habit of shedding its terminal buds, a peculiarity that I have never observed in any other Chrysanthemum. I tried many of the new white and pink varieties sent out last year, and said to be late, but they all bloomed with the ordinary mid-season varieties. Two years ago I raised a plant which I named Mrs. Thomas Cartledge. It carries a large white flower, incurved, and of perfect form, and it has so far been one of the latest on the list. I have not put it in commerce yet, for I want the experience of another year or two to prove that it really is what I hope it is. Another late variety I have named "After the Ball." Its natural time of flowering is the first of December. It is a large-incurved blush-white variety, but it shows the eye. This variety is not in commerce.

Philadelphia, Pa.

W. K. Harris.

Correspondence.

A Robust Pin Oak.

To the Editor of GARDEN AND FOREST:

Sir,—In the meadow in front of my house, thirteen miles from Philadelphia, is a Pin Oak, *Quercus palustris*, that has retained its green foliage in a rather unusual manner this year. About the 14th of October the Oaks in this locality had made some progress toward a change of color, and two weeks later (28th) the glory of the autumn coloring was at its height; this particular Pin Oak, however, retained a bright green foliage. Three weeks after the first changes (November 4th) the other Oaks had mostly lost their bright colors, but this one was still green, with only the outer leaves a little brown, and now, two weeks later (18th), it is more green than brown, although the latter shade is very apparent.

It would be interesting to know by what power this particular tree has retained its green, when three other Pin Oaks near it colored three or four weeks earlier, and have lost nearly all their foliage; it is true that the latter in their early change took on a brighter coloring, but the former, with its deep green leaves, stood in marked contrast with all the other trees in the landscape, except the Junipers. There have been numerous frosts, and the thermometer has registered as low as twenty-eight degrees. The tree is not in an especially protected location, but it is a perfect type of its species, of medium size and age, and beautifully symmetrical.

Saint David's, Pa.

Henry Trimble.

[Individuals of nearly all species of trees vary more or less in the way their leaves change color in the autumn and in the time of shedding them, and such individual peculiarities are often constant from year to year. As we have often insisted, gardeners should take advantage of them, and propagate trees and shrubs for ornamental planting with reference to the brilliancy of the autumn coloring of their foliage. In a group of Pin Oaks, for example, an individual, such as our correspondent describes, retaining its green foliage after the other trees in the group had become scarlet, would add greatly to the beauty and interest of the plantation. This is a subject of much importance to landscape-gardeners and one that is full of possibilities, although we have yet to learn that it has received any attention from them or from the superintendents of public parks.—Ed.]

Chrysanthemums Naturally Grown.

To the Editor of GARDEN AND FOREST:

Sir,—Mr. Watson, in his London letter, referring to some specimen plants of Chrysanthemums exhibited at the Crystal Palace show, says: "As examples of exceptional skill they were the feature of the exhibition, but in a picturesque sense they were excessively ugly." A gentleman at the Boston exhibition remarked of the groups of trained plants, "Fine plants, but horrid." Both gentlemen stand high in the profession—one is a practical gardener, the other a much-traveled and scientific authority.

Now, it is worth while for gardeners to analyze such judgments and see exactly what they mean. Probably the underlying assumption is that specimen plants, if grown naturally, would be less formal and more artistic. Mr. Gerard has frequently, in your columns, urged the claims of Chrysanthemums "naturally grown," whatever that may mean. It is hard to imagine any one becoming enthusiastic over bare-legged plants shivering in a frosty morning, with their heads hanging down out-of-doors. One would rather see them in congenial quarters, even if it is not perfectly natural to cover them up.

I have grown a few specimens every year without stakes. They were neat little plants of varieties suitable for this purpose. I have observed visitors of an artistic and critical turn go into raptures over them, but the fact is that they had not been left to nature; they had required and received just as much care and skill in cultivation as the most severely trained plants. They had been carefully pruned into shape, and kept so by intelligent stopping, so that they were well-balanced and quite globular in outline. If I had left them or any of the general run of varieties grown out-of-doors as bush-plants, without any training or handling, they would have been twisted and blown out of all form and comeliness, more natural, perhaps, but unsightly enough, especially after they had lost half of their leaves from insect and fungous attacks.

If societies will offer prizes for so-called natural plants they can have good exhibitions of Chrysanthemums without stakes, but the best ones will be grown with as much care and skill as the most artificially trained varieties. If staked specimens are to be grown they certainly ought to be grown well, and at the late Boston show the prize did not go to the biggest plants, but to the most highly finished plants. If natural specimens are called for, the best ones will show to the instructed eye that they have had as much thought and attention as if they were staked and tied to the last degree. It is skill which counts in gardening, and the man who is sufficiently expert to grow first-prize trained plants will probably stand abreast of any who grow first-prize natural plants.

"Natural" is a convenient word to use when we wish to discredit skill; but nature has just as much to do in producing staked plants as in producing good natural plants, so called. Nature supplies the vital force—man directs it in either case.

Boston, Mass.

R. P.

Climbing Roses in California.

To the Editor of GARDEN AND FOREST:

Sir,—The thornless Banksian Roses, being of rather a tender constitution and not well adapted to greenhouse culture, are rarely seen in northern latitudes. But there are three varieties of them quite generally cultivated in California and popularly known as the white, large yellow and the small yellow. The habits of these three are so nearly alike that they can only be distinguished by the flowers. Those of the white and small yellow varieties are here about the size of twenty-five-cent pieces, and those of the other yellow are as large as a half-dollar. In spring they are borne in such abundance that they fairly hide the bright green foliage of the plants. Half a dozen or more pedicels spring from the same base, each bearing a very double flower, and altogether forming a cluster like the blossoms of a Cherry. The odor of the white flower strongly resembles that of Violets, but the yellow flowers have little scent. These Banksian Roses are vigorous and rampant growers. On either side of the porch of Mills College, near Oakland, California, one of these white flowering plants was set out in 1872, and one of them now has a girth at the ground of forty-four inches, while the other measures forty inches. One of them divides into eleven branches and the other into ten, and at the height of two feet from the surface these branches have an average diameter of three inches. The college building is sixty feet high, but the plants have reached the cornice, and I lately saw a young lady reach out of the fourth-story window and cut off a branch of this season's growth, which measured fifteen feet in length. How much was left on the parent stem could not be determined, as it came out of a dense mass of foliage some distance below. A few years ago the growth made by a branch in one year measured thirty feet, and it is easy to believe that, if proper support were furnished, these Roses would reach a height of at least one hundred feet.

On the grounds of the same college is a so-called double white Cherokee Rose, a relative of the Banksians, but larger in flower and not entirely devoid of thorns. Its age is unknown as it was on the grounds when the college was built in 1871. An arbor was built by its side twenty feet in diameter, and from this its long shoots droop like those of a Weeping Willow. At the ground this tree has a girth of fifty inches, and one of the nine branches into which it divides measures nineteen inches in circumference a foot beyond where it leaves the parent stem.

Fruitvale, Calif.

H. G. Pratt.

Recent Publications.

Riverby. By John Burroughs. Houghton, Mifflin & Co., Boston and New York. 1894.

To this book, which, according to the preface, contains Mr. Burroughs' last collection of out-of-door papers, he has given the name of his place upon the Hudson, Riverby, where the sketches were written, and where for so many years he has been closely watching the life of nature, which, with the changing seasons, has ebbed and flowed past his door. Most, if not all, of the papers have been published from time to time in various periodicals, but even if they now for the first time saw the light of day, Mr. Burroughs' method of treating the varying features of rural life is too widely known to need more than a word of comment.

Perhaps it should be observed that the work ranges on a less elevated plane than that occupied by Thoreau or Jefferies, neither of whom Mr. Burroughs fully appreciates. He does not seem to understand the high moral purpose which drove Thoreau into the wilderness, and which, reflected in his writings, made them almost as strong a moral tonic to the readers of his generation as the Westminster catechism had been to an earlier one. Nor does he appear to have much sympathy with the almost tropical fervor of passion which throbs through every line of Jefferies' records of nature. Perhaps he has best characterized his gift and its limitations when he speaks of himself as an "interested spectator of the life of nature." Thus his work appeals to the intellect and the artistic sense rather than to the higher spiritual faculties. This, however, does not detract from its value within its special field, and for years he has been the most popular, as he is, perhaps, the most trustworthy, of the many amateur

naturalists, whose aim is not so much to give information upon their special hobbies as to awaken the enthusiasm of others in their chosen pursuits. Thus they attempt to intermingle something of human interest with their records of the wild life of wood or meadow, or to enhance the value of their narrative by some special grace of style and charm of poetic feeling.

To a man who writes under such conditions there must come from time to time the temptation to sacrifice scientific accuracy to beauty of style. But from this temptation Mr. Burroughs seems to be singularly free; nor does he often yield to that other temptation to adorn his tale by some apposite reflection because his readers may expect it of him. His knowledge of the subjects of which he treats, though neither deep nor profound, is singularly varied, and, within certain limits, accurate. It has been obtained by long years of patient and loving observation of rural life in all its phases; thus he is able always to write as if with his eyes upon the object. His frank confession of ignorance of a new flower, the name and habits of which would be known at a glance by an experienced botanist, betrays his lack of scientific training; but, on the other hand, of this flower, and of all its kin, Mr. Burroughs can write with a delicate and tender grace that gives delight to hundreds of readers for whom the formal description of the botanist would have no charm. It may be because of this very lack of scientific knowledge that Mr. Burroughs seems to many a veritable high-priest of nature, standing upon the threshold of the temple to reveal the way to the treasures which are enclosed therein. Nor should it be forgotten that his many sympathetic descriptions of Nature's beauty, his bright narrative of bird and animal life, seem to bring the breath of the fields and woods into the den of tired workers, and to the couch of weary invalids. One of the most attractive papers in this volume, "Prairie Notes," is made up almost entirely of extracts from letters written by an invalid lady "confined to her room year in and year out," but who has yet found in this limited space more of interest to see and record than many who have the freedom of a continent; and certainly the record of the very peculiar manners of her bird visitors makes most delightful reading.

Other papers are simply records of wanderings through the Heart of the Catskills and Mammoth Cave and the Kentucky Blue Grass regions. The sketches entitled "Birds' Eggs" and "Bird Courtship," although hackneyed in subject, are delightfully fresh in treatment. "Glimpses of Wild Life" and "Eye Beams" will give pleasure to all lovers of wild creatures, furred or feathered; and "Bird Life in an Old Apple-tree" has many touches of bright humor. "Hasty Observations" and "Talks with Young Observers" are full of helpful suggestion, and should be read carefully by all those who, not content always to use Mr. Burroughs' trained spectacles, feel a praiseworthy desire to see nature through their own eyes. "Lovers of Nature," the most thoughtful of the essays, makes clear the distinction between the reporter of nature, who simply sees things in detail and enumerates them, and the true observer, who, in the multiplicity of details, lays hold instinctively upon those which are significant, disentangles the threads of relations and distinguishes the typical and vital from the mechanical and commonplace.

It may be that there is in these papers a little less of freshness—a little lack of the spontaneity which gave such a charm to Mr. Burroughs' early writing; as if, for priest as for layman, there come days when Nature has no word for her worshiper, and the glamour which lay so long on earth and sky had faded into the light of common day. But the record of such moods are few and slight, and do not detract from the wholesome purpose of the book, which, perhaps, may be best expressed by the following quotation:

We cannot all find the same things in Nature. She is all things to all men. She is like the manna that came down from heaven. "He made manna to descend for them, in which

were all manner of tastes, and every Israelite found in it what his palate was chiefly pleased with. If he desired fat in it, he had it. In it the young men tasted bread, the old men honey, and the children oilⁿ; but all found in it substance and strength. So with Nature. In her are all manner of tastes—science, art, poetry, utility, and good in all. The botanist has one pleasure, the ornithologist another, the explorer another, the walker and sportsman another; what all may have is the refreshment and exhilaration which come from a loving and intelligent scrutiny of her manifold works.

Notes.

Parts 106, 107 and 108 of Engler & Prantl's *Die Natürlichen Pflanzenfamilien* have lately reached us. They contain the completion of Cactaceæ, by Schumann; the elaboration of Geissolomaceæ, Penæaceæ, Oliniaceæ, Thymelæaceæ and Elæagnaceæ, by Gilg; Gesneriaceæ and Columelliaceæ, by Karl Fritsch, and the Bignoniaceæ, by Schumann.

Since the first pages of this issue went to press we have received from Mr. Michael Barker a description of *Iris Vartani*, which is now in flower at the experiment-station gardens in Ithaca. The bulbs were received from Mr. W. A. Manda, potted late in October and placed in a cool, though sunny, greenhouse. These flowers, like those sent here by Mr. Gerard, and noticed on page 496, exhale a very distinct and pleasant odor.

Four car-loads of fruit from California last week must come very near to finishing the shipments of fresh fruit across the continent. Emperor grapes are still abundant. California quinces of excellent quality may be had, and strawberries are so plentiful that they are sold on the street-stands at fifty cents a box. Kumquats, from Florida, bring twenty-five cents a dozen, and garden pineapples, from Florida, are \$1.00 apiece. Large ripe grape-fruits sell at \$2.00 a dozen, and Spanish pomegranates, of as good quality as they are ever seen here, can be had for a dollar a dozen.

Among the large variety of pears now offered in this city is Forelle, or German Trout, from California, a showy, late pear, long and slender in form. Others are the perfumed Bosc, with its bright bronze, almost golden color; the greenish yellow Comice, with its russet dots; the lemon-yellow Beurre Diel; the fine-grained, buttery Winter Nelis; the white-fleshed Virgalien and the juicy and aromatic little Dana's Hovey, the quality of which is so exquisite that the best of them cost as much as those three times as large. Besides these there are the Sheldon, Clairegeau, Glout Morceau, Anjou, Lawrence and many more, since cold storage makes it possible to keep the autumn varieties well into winter.

To a correspondent of *The American Florist*, who complains that apparently healthy plants of the white-flowered *Swainsonia galegifolia* drop nearly all their buds before they open, Mr. Edwin Lonsdale replies that these plants resent overfeeding with liquid fertilizer. When the soil is at all rich even small amounts of weak manure-water cause the flower-buds to drop. What they need is liberal root-room and a porous, or, at least, a well-drained soil. Mr. Lonsdale tells florists that the flowers of *Swainsonia*, above those of almost any other plant, ought to be cut some time before they are placed in the hands of retail customers. If cut and placed in a dark refrigerator or cellar until thoroughly cooled and filled with moisture they will last for a long time.

A correspondent of the *Gardeners' Chronicle*, in writing about the Coreans, whom he considers intellectually a sort of inferior Chinamen, says that they by no means neglect flower-gardening. A pond thickly set with *Lotus* is the most common form of decorative planting practiced by them, but the *Chrysanthemum* is also grown to perfection, and a festival in honor of this plant is the most popular of their annual celebrations. Those who are able to do so, cultivate it under frames covered with oiled paper, which is an excellent way of getting good flowers. It is in comparatively recent times that European gardeners discovered the secret of growing large flower-heads by training plants to single stems and single flowers, but the Coreans have practiced this system for centuries.

Mr. Robert Douglas, writing to *Meehans' Monthly*, gives it as his opinion that climate has considerable to do with the fragrance of flowers, and that Mignonette, Roses and Azaleas, etc., are not as fragrant here as they are in England, and that they are not as fragrant in the western states as in New Eng-

land. Carrying this theory a little farther, he observes that the White Spruce from Maine and Lower Canada has such a strong odor that it is called the Skunk Spruce, while the odor of the same tree in the drier atmosphere of Minnesota is not nearly as pungent, and this Spruce when found on the summit of Terry's Peak, in the Black Hills, exhaled no odor whatever, and Mr. Douglas was compelled to rub a twig with its foliage and bruise it in his hand before he could catch the distinctive smell.

The Trustees of the Missouri Botanical Gardens announce that there is a scholarship to be awarded in that institution before the first of April next. Preliminary examinations will be held on March 5th at the Botanical Garden, but persons who live remote from St. Louis can send their applications, and arrangements under certain conditions may be made for a competitive examination before the principal of some high school near the home of the applicant. All applicants will be examined in English grammar, reading, writing and spelling, arithmetic and geography, and, in case of a competition, in other studies, including history, literature, botany and physiology. Any one who cares to secure one of these scholarships or who wishes to enter the garden as a pupil without any of the special scholarship grants can find all the needed information by applying to Professor William Trelease, the Director.

Dr. J. H. Mellichamp, of Bluffton, South Carolina, sends us a note relative to a tree of the rare Ogeechee Lime, *Nyssa Ogeechee*, growing on high sandy land on the old Hardee plantation, near South May River, in Beaufort County, South Carolina, that was brought from the Ogeechee swamps by Mr. Hardee fifty or sixty years ago as a little tree, and planted in a Corn or Cotton field. "It seems remarkable," Dr. Mellichamp writes, "that this water-loving swamp tree should have so flourished in sandy land and attained such dimensions. It is now a beautiful, and, in some respects, a most peculiar-looking tree, and is in perfect vigor, looking as if it could live for a hundred years longer. Its height is supposed to be about thirty feet; the trunk girths six feet one inch at three feet from the ground, and at the height of seven feet divides into three very large limbs." This is certainly one of a very few plants of this rare species in cultivation, and perhaps the only one, although it is said to have been sent to Europe in 1806 by the English botanist, John Lyon.

Of the *Chrysanthemums* on sale in this city Mrs. Jerome Jones, Minnie Wanamaker and Niveum are the prevailing whites, and W. H. Lincoln and Dr. Covert the latest yellows. There are practically no pink or red varieties in commerce here. The best flowers of the large varieties bring fifty to seventy-five cents apiece. Crystal Wave, a small white *Chrysanthemum*, is among the latest, and is sold in sprays. Mr. Edwin Lonsdale writes from Philadelphia that Mrs. J. G. Iis, Mont Blanc, Mrs. H. H. Battles and Mrs. Thomas Cartledge are all proving good for late market flowers. The fact is that the operator can prolong the season of *Chrysanthemums* by judicious propagating, so that any of the mid-season varieties can be grown late, and any of the late varieties can be made to flower very late. The best American Beauty roses, with stems three to four feet long, bring at retail \$1.50 each. Of course, this is for choice flowers, which always command high prices. Clusters of fifty of the best-grown Marie Louise violets sold last week for as much as \$3.00.

We have received an interesting photograph of a Water-lily tank, in which four or five of the tropical *Nymphæas* are in bloom, and the buds show that many more flowers are to come. The photograph was taken on the 20th of November, and Mr. Rodolfus Bingham, of Camden, New Jersey, in whose residence the tank is built, states that the Water-lilies have been flowering since early in June. Some of the leaves are over sixteen inches in diameter, and the flowers seven inches across. What makes this pool of particular interest is that it is in an attic-garden, that is, in the third-story of a part of Mr. Bingham's dwelling-house, which has a glass-roof, and so far has only had the surplus heat from the rooms below. Abutilons, Ferns and many other plants in this room, which is twenty-eight feet by twenty in size, look very thrifty. For people who live in cities a conservatory on the roof is worth considering, from the fact that it receives the sun for an hour or two longer every day than it would on the ground. Mr. Bingham writes that by pressing a circle of fine wire between the petals and stamens of *Nymphæa*-flowers the day-blooming varieties can be kept open at night; but the suggestion of any such restraint laid on the habits of a flower is not altogether pleasant.

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Deciduous Trees in Winter.

PERHAPS the primary notion conveyed to most minds by the word "tree" is that of a mass of foliage, and yet in this climate by far the larger proportion of our trees are leafless for six months every year. It is far from being true, however, that trees are stripped of their attractiveness when their leaves fall. Indeed, a good argument could be made to prove that trees with deciduous leaves are more beautiful as a class, taking the season through, than coniferous or even broad-leaved evergreen trees. There is a certain monotony in the look of trees with persistent foliage which one would hesitate to pronounce tiresome, but certainly a livelier interest is excited by trees which pass through a series of striking transformations from month to month as the soft colors of the bursting leaves in spring develop into the green luxuriance of summer, which in its turn gives place to the glowing tints of autumn. All these changes give a diversity and animation which is not possible to any evergreen tree. Even the falling of the leaves only uncovers beauties which they had concealed—beauty in structural symmetry of the supporting trunk and limbs, beauty in the graceful disposition of the smaller branches, and beauty of form and texture and color in every detail.

Indeed, it is only when the tree is stripped naked that we can see the reasons for its characteristic beauty when in full leaf. Next to their general outline the most marked distinction between trees in summer is found in the way their foliage breaks into areas of light and shade. The Oak, with its deep shadows contrasting strongly with the masses of leaves which stand out boldly to catch all the light, and the smooth sunny surface of a young Maple, where the alternating spaces of light and shadow are smaller and more numerous, may be cited as two specially distinct types of trees. But the structural reason for this superficial difference is readily seen in winter. The massive trunk of the Oak separates into a few large branches, and these leave deep cavernous openings for heavy shadows in the foliage which are not possible in the Maple, with its skeleton of numerous slender branches radiating at a uniform angle from the central stem. It is not, therefore,

the covering of leaves, but the framework of the tree, which determines not only its general contour but fixes its expression, whether of cheerfulness or gloom, of dignity or grace.

But it is not only the general structure of trees that makes them worth studying in winter. There are distinctive beauties of detail in every leafless tree which give it an individual interest. The bark may be as smooth and fine-grained as it is in the Beech or Hornbeam, or it may be ridged and furrowed, or plated over with protective scales, but it is always interesting, and the browns and russets and grays of its large limbs have a richness of color which is peculiarly their own, while the tracery which the slender branchlets make against the sky is a revelation of delicacy and grace which is never seen until the trees are bare. The columnar strength of the great trunks with the beauty of their weather-worn and lichen-stained bark is never so manifest as when they rise darkly above a glittering carpet of snow, while the lace-like grace of the spray is brought out with charming distinctness by the purity and brilliancy of the winter sky beyond. Indeed, the fullness and clearness of the light in frosty weather give an added charm to every element of the landscape, and the bare trees when bathed in it acquire a new and indescribable beauty. Then there are winter days when some special atmospheric conditions quite transfigure the trees and present them to the eye as new creations. They may be white as alabaster on their stormy side when the damp snow clings to trunk and limb; or every twig may sparkle in a fleece of hoar-frost; or all the trees in a broad landscape may be cased in polished silver, with every branch arching under its burden of transparent ice. In fact, the winter aspect of trees is no less varied than their appearance in full leaf, so that to one who habitually observes them merely as beautiful natural objects, as truly as to the systematic student of botany who takes note of their winter buds and other distinguishing characteristics, no dull season ever comes.

In most of our older cities where there is anything like an adequate supply of public parks, this result has been due to the self-denying labors of a few forward-looking men. Thirty years ago there was nothing like a popular appreciation of the value of recreation-grounds to a city, and, therefore, no urgent demand for them, but in every case one or two unselfish workers have taken the cause to heart and labored untiringly to arouse the slothful public to a sense of what was needed. These men encountered discouragements at every step in the apathy of their hearers, and in the stolid resistance of town authorities to what seemed to them unremunerative outlay, and yet they persisted, and some of them are still living to see their prophecies become fact and all their arguments more than vindicated. They worked for no reward, but it seems to be an injustice that these early educators of public opinion, who had, in the first place, to create the taste they wished to gratify, have received so little recognition. It is not creditable to this city that among the so-called works of art in Central Park there is no statue to Downing, and in many other cities there is not even a tablet within their park gates to commemorate the self-denying efforts of their real originators—men whose very names can only be ascertained by searching through the early park reports, and even here they too often receive but scanty mention.

But there is another service connected with parks which men of wealth can render. The city of Hartford seems to be conspicuously fortunate in having received from three different citizens within a short time very considerable areas of land to be devoted to public use. Munificent gifts for similar purposes have been made before, but men who have wished to make some civic endowment have usually chosen to do it in some other way. In almost all of our important cities public-spirited men have founded libraries, hospitals, galleries of art and museums of various sorts, while comparatively few parks or grounds have thus

been presented to the public. But certainly here is an inviting field for men of wealth who are studying how they can be wisely generous. It is true that city officials ought to consider it as much their duty to furnish the people with broad stretches of park-land for their refreshment as it is to give them a pure water-supply or a good system of public schools. As a matter of fact, few of our cities do supply the actual needs of their people in this respect, and there is little danger that the authorities will furnish too much land for public recreation. It is to be hoped, therefore, that the example of these patriotic citizens of Hartford will commend itself to men of wealth in other cities who wish to do a real service to their cotemporaries, and to leave behind them an unfailing source of health and refreshment for coming generations.

The Cottonwood for Forest-planting on the Plains.

THE Cottonwood has been called the pioneer tree of the western plains, and certainly it has formed fully three-fourths of all the plantings thus far made on them. Growing along all the streams, from the Missouri River to the Rocky Mountains, and being propagated without difficulty, both from cuttings and from seed, it has been the most available species in the west. Add to this its rapidity of growth, its promise of forming quickly a protection from wind and sun, and its great popularity is fully explained. In the majority of cases it has proved a disappointment to the planter. It is only at home where its roots are within reach of an abundant supply of water, and hence its true habitat is on the borders of streams or lakes—preferably the former. While its seedlings make dense thickets on the sandbars along western rivers, the great majority of the trees die within a few years, leaving single specimens, remote from one another, to come to full maturity.

Had these facts been observed by the pioneers of the west much disappointment and consequent discouragement to forest-planting would have been obviated. In point of fact, the Cottonwood has been set in dense plantations, on high and low ground alike, and from frequent failure, the result of a total disregard of the needs of the species, it has been hastily and erroneously inferred that "forest-tree growing is impossible on the plains." Where planted in single rows, as along highways or division lines, I know Cottonwood-trees in South Dakota, even on high land, that are in fine condition after twenty years from setting. And in low land, where the conditions are favorable, the trees make remarkable growths, even when unmixed with other species; a splendid example of the growth can be seen on the farm of the Nebraska State University, at Lincoln, and another, equally good, is the Railroad plantation near Hutchinson, Kansas. Under irrigation, pure groves of Cottonwood, ten to twenty years planted, have quite changed the face of the country about Rocky Ford, Colorado; but in all these groves, of from ten to twenty acres in extent, an abundant water-supply was available for the trees. On the other hand, there are a number of groves of similar size in Brookings County, South Dakota, and I dare say throughout the west, that were in thrifty condition three years ago, which the last two dry seasons have completely killed.

The Cottonwood may have a place in western planting, but it should be a very small place, for there are many trees, in every way better, that can be as easily grown.

Washington.

Charles A. Keffer.

The So-called Florida Sea Beans.

MOST visitors to Florida have seen the beautiful sea-bean jewelry offered for sale in many of the principal cities and towns, and those who have been to the sea-coasts, especially along the eastern and southern sections of the state, have generally had the great satisfaction of finding some of the beans in their rough state.

But few persons know what they really are, or where

they originally came from. In this country they are known as "Florida sea beans," and it is the common belief that they grow on a marine plant, or, at any rate, somewhere on the sea-coasts of the state or among the numerous keys bordering on it.

The so-called sea beans found on the Atlantic and Gulf coasts of Florida, and more rarely to the northward and westward, belong to four genera, only one of which grows in this country. Among the objects occasionally washed ashore on the peninsula (see No. 5, Fig. 79) are marble-like seeds of a light gray color, having a natural polish. These are the fruits of a tall spreading shrub, not a climber, known in its native countries as the "Nicker-tree," *Cæsalpinia bonducella*. There the seeds are called nicker nuts or bonduc nuts. Most of those found on our shores are waifs from the West Indies and Central America, although the species was discovered many years since growing on the extreme southern coast of Florida, some of the nuts washed ashore having taken root and grown to bearing size. The genus contains about forty species, widely distributed in tropical countries of both hemispheres. Many of the species grow on or near the sea-coasts, where the nuts readily find their way into the water, and are thus disseminated far and wide. The nuts are generally about the size of marbles, and nearly as hard.

The musical name of the Florida species, *bonducella*, is partially derived from the Arabic, *bondog*, signifying a necklace, for which purpose, and for bracelets, rosaries, etc., the nuts are commonly used. The leaves of the plant are bipinnate, and its branches and stems bear hooked prickles, like the Locust, generally distributed in pairs. The seed-pods are two or three inches in length, flattened, with rounded ends, and contain two nuts; they are covered with sharp prickles, like the seed-pods of the common Jimson-weed. The entire plant is used by the native Indian doctors. The nuts are extremely bitter, and are employed as a tonic and vermifuge. They also yield an oil believed to possess great virtue in palsy, etc. Probably their medicinal qualities have never been fully tested in our laboratories.

Another species, *Cæsalpinia pulcherrima*, is cultivated in gardens on the Island of Barbadoes, where it is known as the "Pride of Barbadoes." I have heard that this species has been introduced into southern Texas, but cannot verify the report.

The most common beans found on the Florida coast belong to the genus *Mucuna*, one of the Leguminosæ, represented in the illustration by the upright rows numbered 1, 2 and 3. The species, of which there are several, are widely dispersed in tropical regions, being common to Asia, Australia, the islands of the Pacific, South and Central America and the West Indies. All are twiners or tall climbers, with trifoliate leaves and large purple, white, yellow or greenish flowers. This genus is a great annoyance to travelers, the leathery seed-pods being thickly covered with stinging hairs, resembling the covering of a red caterpillar. These are easily detached from the pod, and if they happen to fall on exposed parts of the person cause great irritation and soreness.

Row No. 1, Fig. 79, shows *Mucuna altissima*, more frequently picked up than any others. The average size is about one inch in diameter, and usually quite flattened. The raphe, or ridge, corresponding to the eye of a common bean, from one-eighth to three-sixteenths of an inch in width, extends around one-fifth of the circumference, and in this species is invariably jet-black. (The lower beans in the illustration are turned on their edges to show the raphe.) The surface of the bean is closely pitted or granular, and of stony hardness. The colors are various, some being light or dark brown, often nearly black, and others of a grayish or fawn hue. They are usually beautifully mottled with black—impossible to show in a photograph. The pods contain from one to three seeds.

The bean next to the bottom, in Row No. 2, belongs to another species, less common than the one last de-

scribed. The shape is somewhat square, and the raphe, which extends around one-third of the bean, and corresponds more with the ground color, is usually yellowish red. This bean has greater roughness than any of the others; it is also mottled or streaked with black. The next two beans above, in the same row, are evidently varieties. Their color is a rich chocolate red, without mottles. The large bean at the top of the second row (No. 7) is the fruit of another species of the genus *Mucuna*. It is quite distinct from the others in

lacking the mottles. The pods contain one or two beans each.

Before leaving this interesting group I will mention one more species, *Mucuna pruriens*, which affords the kiwach or cow-itch of medicine, a celebrated remedy for intestinal parasites. The seed-pods are four or five inches in length, shaped somewhat like the Italic letter *f*, and covered with a thick coating of short, stiff, needle-like hairs, of a light brown color. The ends of the hairs are barbed or serrated;

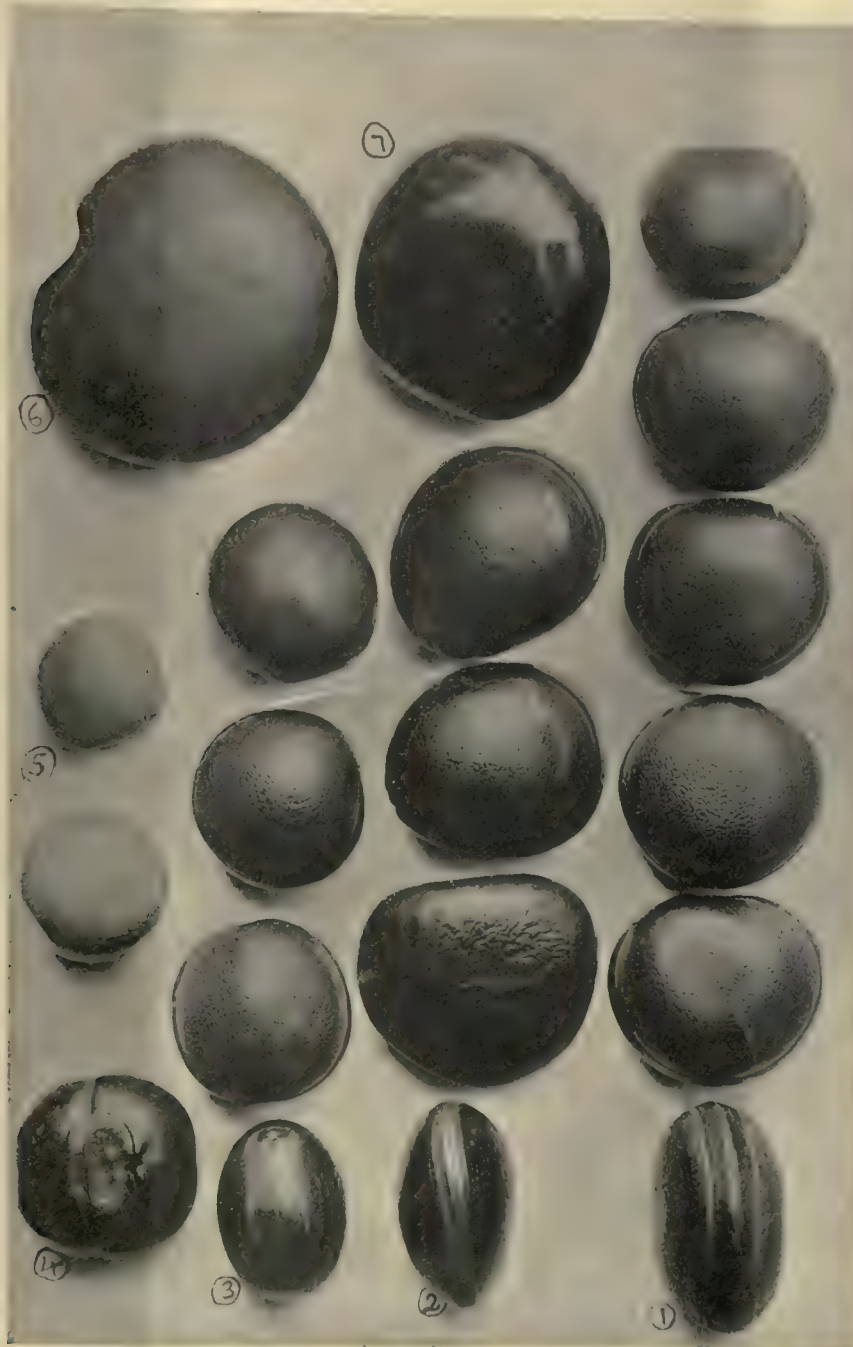


Fig. 79.—Florida Sea Beans.—See page 502.

1, 2, 3 and 7. Fruits of different species of *Mucuna*. 4. Fruit of *Macadamia ternifolia*. 5. Fruit of *Caesalpinia bonducella*. 6. Fruit of *Entada scandens*.

size, color and shape. The form is thick and flattened, with more square-like edges, and a raphe nearly double the width of any other in the collection. The color is very dark, almost black. The light appearance of this particular specimen is owing to the fact that one side has been polished. It is not often found on our shores.

In row No. 3 we have still another species, considerably smaller and comparatively globular. The common colors are various shades of mouse, delicate brown or red, always

when taken internally, mixed with molasses, they dislodge the worms by sticking into their bodies, the action being entirely mechanical. The common name cow-itch, or cowage, is a corruption of the Hindustani kiwach. The flowers have a disagreeable garlic odor.

The most interesting of all is the celebrated "Queensland nut" (No. 4, in Fig. 79) of Australia, *Macadamia ternifolia*, the Kindal-kindal of the aboriginal inhabitants. It belongs to the curious order Proteaceæ. The nuts are pro-

duced on a small tree thirty to forty feet in height, having a dense growth of oblong or lanceolate leaves from a few inches to a foot in length, glossy, and serrated with fine prickly teeth. The wood is finely grained and a reddish color, resembling our cherry. It is highly prized for cabinet-work, but as the nuts are even more valuable, furnishing a nutritious food to the natives, timber-cutters are not allowed to fell the trees. The kernel has the flavor of a Brazil or Hazel nut, and the shell is jet-black, polished, and of iron hardness. The shape is nearly square, with rounded corners and flattened top and bottom. A perfect letter C is contained on one side of the nut, as shown in the illustration. A groove surrounds it from edge to edge of the letter. Like the acorn, it is indehiscent, the seed being liberated only by the decay of the shell. The tree is a native of northern New South Wales and Queensland.

In a bulletin of miscellaneous information issued in October last by the Royal Botanic Gardens of the island of Trinidad, it is said that the gardens contain a specimen of the Queensland nut-tree, which has borne fruit in fair quantities since 1891. The tree is twenty-five or thirty feet in height, and is believed to have become thoroughly acclimatized. Plants are being raised from the seed as fast as possible, for it is considered a valuable acquisition.

The tree does not grow on the island outside of the gardens, nor have I been able to learn that it has ever been discovered on any other island or coast of this hemisphere. It is doubtful, therefore, just where the occasional specimens found on the Florida coast come from. Probably some of the nuts have found their way by oceanic currents or in the crops of certain birds, perhaps even in the stomach of fishes, to some locality in the West Indies, where they have taken root and grown to fruitful trees, from whence come the few specimens.

The large bean in the upper left-hand corner of fig. 79, No. 6, is called the Liver Bean (*Entada scandens*), from the liver-like color. The woody climber which bears it often reaches the tops of the tallest trees. The pods are woody, and attain a length of from two to four feet, and a breadth of three to four inches. They contain from ten to thirty seeds, often two inches in diameter. One in my collection is seven and a half inches in circumference. This genus is common to Australia and many tropical countries, including the West Indies. The kernels are used in some countries for washing the hair and crimping linen.

The iron-like hardness of all of these beans and nuts is proof that Nature intended the germs to have special protection. And it is needed, for the wide distribution of the genera is effected by long voyages in ocean currents, often subjected to delays on sandy beaches under a blazing sun, which would destroy the vitality of most seeds.

The manufacture of sea-bean jewelry has been a regular and paying business in Jacksonville and St. Augustine, Florida, for many years. When first found on the beaches, among seaweed and shells, most of the species are very rough. This roughness is removed, first, by filing with a flat-file, followed by vigorous rubbing on fine sand-paper. They are next held on a rapidly revolving felt wheel, on which powdered emery has been sprinkled. The final gloss, which discloses the delicate colors and mottles, is produced by a felt wheel on which a very delicate polishing substance has been rubbed. The jewelers have various ways of mounting the beans and nuts for watch-charms, sleeve-buttons, etc., with initials, monograms, compasses, etc., and readily sell them as souvenirs of a visit to the land of sunny skies.

Brookland, D. C.

Charles H. Coe.

The snow hangs on the Pine-trees as the fruit of the season. In those twigs which the wind has preserved naked there is a warmer green for the contrast. The whole tree exhibits a kind of interior and household comfort, a sheltered and covert aspect. It has the snug, inviting look of a cottage on the moors buried in snow.—From *Thoreau's Winter Journal*.

New or Little-known Plants.

The Muskeag Spruce.

CLOSE to the open water that remains uncovered by the growth of sedges and sphagnum that is filling or covering many of the forest-lakes of Minnesota, little Spruce-trees are stubbornly existing, although they have no mineral earth to grow upon, and one may put them under water by standing upon the bog at their roots. They grow very slowly, the rings of annual accretions of wood on the trunks being sometimes so small as to be invisible without a microscope, and these little, but old, trees are found bearing cones when less than three feet high. After this time nearly all the energy of the tree seems to be devoted to fruiting, and the cone-bearing branches become the only vigorous ones. These are densely crowded near the top of the tree, while the trunk below is often destitute of living branches, although unshaded and growing far from other trees. These dense tufts of dark branches, like plumes upon poles, present a strange spectacle to the traveler who, for the first time, crosses the larger Muskeags, especially at twilight, for he seems to be looking over a weird procession stretching off mile after mile until lost in the distance.

In the smaller Muskeags there is a marked gradation of size from the smallest seedlings by the water in the centre of the bog to the tall, slender trees, sometimes sixty feet high, upon the shores of the basin. As the soil on which these trees grow becomes more firm, branches are developed more freely upon the lower trunk, but such branches are always weak and have a tendency to droop. Some of the tips rise to a level with the base of the branch, but most of the branches fall far below, even hanging like vines against the trunk and shooting out horizontal or slightly ascending branchlets at the tips. Occasionally, for some reason connected with the history of the individual tree, no doubt, a branch or two toward the top has an unusual development and is apt to form a grotesque figure in bold relief against the sky.

While the form that occupies the Muskeag is uncouth and weird, the trees that grow on fertile, but always moist, upland often have much beauty. They are usually found growing in beds of Sphagnum and Ledum, with *Betula pumila*, *Alnus*, *Salix* and *Spiræa*, but are sometimes seen on higher ground with *Larix laricina*, *Abies balsamea*, and even with *Betula lutea* and *B. papyrifera*. The cones of both forms are densely clustered upon the upper branches and trunk in such a manner as to be protected by the later-grown branches. They seem to open the second year, and remain attached to the tree many years. They are from half an inch to an inch in length, and have scales that are thin and light-colored upon the edges, where they wrinkle, and appear ragged as they dry before opening. The leaves of the fruiting branches are dense, thick and stiff, a quarter of an inch long, prominently ribbed above and below, and have four or more rows of stomata along each side of the lower rib. The leaves of the lower or non-fruiting branches are a half to seven-sixteenths of an inch long, much more slender and less dense than those upon the fruiting branches. The young branchlets have a dense woolly pubescence that remains several years. It is buff at first, but changes to brown. The bark of the trunk is very shelly, and when fresh is yellowish brown in color.

The trees grow slowly to a height of sixty feet, are cylindrical in form, except for the dense conical top of fruiting branches, and rarely exceed eight feet in diameter. The diameter of the largest trunks noticed is about ten inches. Is this merely the Black Spruce grown under adverse circumstances near its north-western limit? The locality where the pendulous form seems to be most prevalent, and where the photograph (see page 505) was taken, is on a gently sloping but wet sand plain once covered by the waters of Lake Superior, when some four hundred feet above their present level, and near the moraine that

formed their western shore. Although the tree abounds elsewhere, especially northward, nowhere else have the drooping branches seemed so characteristic a feature as in this central part of Carlton County.

Carlton, Minn.

H. B. Ayres.

in a fresh condition until late in autumn, when they bend under their burden of deep or purplish red berries, which are borne abundantly every year. Masses of these plants in Central Park and Prospect Park are still very effective, as the fruit is retained in fair color. No doubt, the Indian



Fig. 80.—Upland form of Muskeag Spruce.—See page 504.

Plant Notes.

SYMPHORICARPUS VULGARIS.—This native plant, well known under the name of Coral Berry or Indian Currant, is most useful for parks and other places wherever a mass of low-growing shrubbery is needed. It is a graceful plant with slender branches, and although its flowers are inconspicuous, its foliage is good all summer, and it retains its leaves

Currant would prove very valuable for use on embankments or any other place where something is needed to hold the soil. The Snow Berry, *Symphoricarpus racemosus*, is a larger shrub, and its clear white fruits contrast well with the red berries of the Indian Currant. There is a variety of *S. racemosus* called *pauciflorus*, which is a very dwarf diffusely branched shrub which will thrive on thin and poor soil or in partial shade. We have already

given a figure of the western *S. occidentalis* (see vol. iii., page 297), a species which inhabits rocky wooded banks from Michigan to Colorado and Montana, and extending far to the north. It is a good garden-plant for a cold climate, but its greenish white fruit is not as conspicuous or as attractive as that of the Snow Berry.

SCIADOPHYLLUM PULCHRUM.—The last number of the *Revue Horticole* that has reached us contains an interesting article on this plant, which is more often found in collections under the name of *Aralia pulchra*. It is a small tree with leaves two feet or more across, composed of seven to twelve digitately arranged entire leaflets, and borne on stout stems two to three feet in length. The leaves are light green and very lustrous, and no other plant with which we are acquainted lights up so well under artificial light. It is particularly valuable, therefore, in conservatories connected with dwelling-houses and for the decoration of ball-rooms and large banqueting-halls; and its value for such purposes is increased by its ability, although a native of the tropics, to withstand dirt, rough usage and a comparatively low temperature. As a conservatory or room plant it is as hardy as the well-known Rubber-plant, *Ficus elastica*, and is far more beautiful. Our contemporary extols the beauty and value of this plant, and complains that it is so difficult to propagate that it is exceedingly rare in European gardens. It is rare, too, in those of the United States, although in the few gardens here where it is known and appreciated no difficulty is found in inducing cuttings made from short lateral shoots to root freely in the sand or moss of the ordinary cutting-bench. Florists who furnish decorations for balls or other festive occasions may well add this plant to the rather small collection of subjects as really valuable for this important and growing industry.

MANETTIA BICOLOR.—This plant, which has been in cultivation for more than fifty years, comes originally from Brazil, and it is related to the well-known Bouvardia. It has a twining stem, and strong plants will reach a height of fifteen to twenty feet. Although its flowers are solitary, several appear crowded together on the short lateral branches, and in well-grown plants fresh flowers and buds appear for months at a time throughout the whole length of the vine. When started at the proper time it makes a beautiful outdoor climber, although the flowers are not nearly as large as they are represented in some of the trade catalogues. They are of a brilliant red and yellow, rather less than an inch in length when fully open, and they remain fresh on the vine for a fortnight. When planted out in spring this plant makes an excellent summer climber. At this season no better subject can be used for brightening up the blank walls of a greenhouse, provided they are planted in a bed, for they seem to resent pot-culture. They look better if several plants are set together, so that the mass is kept thick at the bottom. This *Manettia* is of such easy culture that it is a good subject for the window-garden when it can be grown in a large box. It is subject to the attacks of the mealy bug in the greenhouse, but an occasional syringing with Fir-tree oil will hold this enemy in check. Nearly two years ago Professor Butz, of the State College, Pennsylvania, wrote that one of these vines which had been planted alongside of a *Grevillea* over which it clambered, was showing about eight hundred flowers when only a year old, a floriferous condition which it had maintained for months.

IRIS ALATA.—This plant, also known as *Iris scorpioides*, is not uncommon either in cultivation or in its native haunts in southern Europe, Algeria and Morocco. Professor Forster says that Greece is its eastern limit, and that, as far as he knows, it has "never crossed the Bosphorus eastward," as none of the eastern members of the group have crossed to the westward. One would not question Professor Forster's information on this point, but importers of the bulbs of this *Iris* must have noticed lately a mixture of *I. Palæstina* with them. As these are usually "collected bulbs," it would be interesting to know whether this

is because the dealers are careless or because *I. alata* has been lately found in Palestine as a new habitat. *I. alata* is one of the Juno group of Irises. They have aroid bulbs, with brownish membranous coats and fleshy persistent roots. The leaves, which commence to grow in September, usually are light green and Leek-like in growth, all appearing from one base; they are folded and six to nine inches long. The flower is slender, and appears from the centre of the leaves, and its long tube carries it above the foliage. In good forms the flowers are some three or four inches in spread, with falls somewhat frilled and scarcely an inch broad. The claws of the falls have wings, from which the *Iris* takes its specific name. The color is usually a pale lavender with yellow ridges, and spots and linings of blue on a white ground on the falls. The standards are very small and inconspicuous, but the crests are prominent and frilled. There are numerous forms of this *Iris* named in catalogues, but our experience is that there are few in cultivation. The cultivation of this *Iris* offers some difficulties; it is difficult to ripen the bulbs satisfactorily so that it will flower the second season. Both in pots and bedded out in a cool house they will frequently dwindle and often disappear altogether. It is well to have a reserve stock of *I. alata* in the open, as it is hardy, or the stock may be replaced at small expense, though dealers are apt to send out an unfair proportion of small bulbs, often without roots. The Juno section of Irises, it will be remembered, includes such interesting species as *I. Persica*, *I. orchoides*, *I. Caucasica* and *I. sindjarensis*, which follow in growth and flowering early in the year.

Cultural Department.

Achimenes.—II.

THE complaint has often been made that many of the *Chrysanthemums* and *Roses* in commerce are too much alike, and the same is true, to a very great extent, of *Achimenes*. There is small pleasure in finding that the long-expected blossom of a variety with a new name is precisely like one or more that we have had for years. I have tried nearly all the varieties which have been offered for sale in Europe for the last twenty years, and desire in this paper to tell my experience, feeling that, though it may not be very readable, it may be useful as a review of a genus seldom fully treated. Many of the kinds I have grown are no longer in the dealers' lists, and I have, therefore, omitted them here; those I mention are still to be had in England, Belgium or Germany. The species number nearly forty, and are natives of America, from Mexico to southern Brazil. The *Genera Plantarum* ranks among them the lovely *Gloxinia tubiflora* of the *Botanical Magazine*, t. 3971, called by Hanstein, in *Linnaea* (xxvi., page 205), *Dolichodeira*. It may be useful to say that in the *Genera Plantarum* the name is spelled *Dolichoderia*, and that in *Durand's Index* the same error is twice repeated. The references to *Linnaea* given in Benth. and Hook. are all wrong. As for the name *Achimenes*, its meaning is not clear. Dr. Lindley rejects as fantastic the suggestion that it may come from *Achæmenes*, a king of Persia, while some authorities suppose it to be derived from *cheimaino*, to suffer cold, in allusion to the tenderness of these plants. The last syllable but one should be accented in pronunciation.

Achimenes longiflora is a Mexican species, easily distinguished by its shining foliage and pear-shaped bulbs, as well as by the shape of its flowers, which consist of a long narrow tube with a flat, spreading limb, which generally lies in a nearly horizontal plane. The type (*Botanical Magazine*, 3980) is blue, of a slightly purple cast, and about two inches in its largest diameter. There are many varieties of this species, and all mentioned in this paper belong to it. *Celestial* and *Cherub* differ in no way from the type. There used to be a *Celestial* which was light blue in color, which is not now to be had, but its place is well filled by *Oberon* and *Dentonia*; the latter is an ashy-blue, the other somewhat darker, but much lighter than *A. longiflora*; both are worthy of cultivation. *A. longiflora macrantha*, *Mauve Queen*, *Moore's Perfection* and *Mauve Perfection* are much larger than the type, and any one (not any two) of them is worth growing. It is desirable in such a case to get the best, and I have no hesitation in saying that

Mauve Queen is the one to choose. Its flower differs from the typical form by its much larger size and better substance, yet it ought not to crowd *A. longiflora* out altogether, for its blossoms are by no means as freely produced. *A. Jaureguizæ* of the *Flore des Serres*, pl. 536, is simply a white variety of *A. longiflora*; it and its varieties are hardly as vigorous as the blue or purple kinds, but all are very handsome. *A. Jaureguizæ* or *A. longiflora alba* (the same catalogue frequently offers it under both names) would be a very desirable plant were it not for *A. alba maxima*, which is much larger and finer. Its whiteness is perfect, except for a tinge of lemon at one side of the opening in the centre and a touch of purple at the other; this is a kind to be chosen. William Muller and Edw. Boissier are so much like it that they may well be disregarded, but *Margarita* is quite distinct, as it lacks the purple mark. This is the whitest of all *Achimenes*. Dr. Hopf is also a white *longiflora* which, perhaps, is not needed. *A. longiflora rosea* is like the type, except in color, which is, as the name denotes. *Adèle de la Haute* is also a rosy *longiflora*, but lighter in tint and desirable. *Ambroise Verschaffelt* is described by Van Houtte as being "white, reticulated with light pansy," which means that the white ground is covered with a network of violet lines. There is also a conspicuous violet blotch at one side of the orifice. This is a very striking and beautiful variety which ought to be in every collection. *Diamond* and *Pulcherima* do not differ from it in the slightest degree; whoever has one of them has all three. This completes the varieties of *A. longiflora* kinds as far as my experience goes. There are many other species and hybrids which I will describe in another paper.

Canton, Mass.

W. E. Endicott.

Greenhouse Work.

WE are now passing through the duller part of the whole year, at least plants seem to improve less between the time of *Chrysanthemums* and the new year than at any other period. But this will soon be changed, for once in the new year the days soon lengthen, the sun gains power and work comes on apace. No work that can be done at this time should be neglected, for any headway made now is all clear gain when the busy season comes. All pots that have been used should be washed and stored away, each size separate. This seems hardly worth the telling, but we so often see a heap of dirty pots piled away, all sizes together, and most likely a fourth of them cracked or broken when they are wanted. We also make a practice at this season to get from the woods straight twigs for flower-stakes next summer. Cut and pointed at this time these are more durable than they would be if cut with the sap in them. After all, there is no plant-stake so inconspicuous as a young sapling, and the smallest twigs should be saved for staking *Achimenes* and other slender-growing plants. Such stakes as these are not of much value after one season's use and may be thrown away.

All bulbs that are stored away for the winter should be examined now. *Begonias*, *Gloxinias* and *Amaryllis* do not like a temperature lower than fifty degrees. We have had serious losses some years from too low a temperature, and on the other hand a relatively high temperature is harmful, because a proper season of rest is not allowed. *Caladiums* need a hot, dry place, and do well stored in a warm boiler cellar; if shaken out of the pots and put in dry sand, space is economized, and the pots can, meanwhile, be cleaned. *Achimenes*, too, can be treated in this way, but should not be kept so warm.

It seems early to begin propagating, but we always get in a few *Carnation* cuttings in December for early fall flowers. These are allowed to come in in the early part of October, or as soon as the outdoor supply of flowers is cut off by frost, the indoor *Carnations* not flowering until after the *Chrysanthemums* are past. Frame-grown *Carnations* are very useful in early autumn, but, to have them good, early propagation is desirable. We like to get in the main stock of plants for next winter bloom as near to the tenth of January as possible. The cuttings root readily then; they can be well hardened off after being rooted in preparation for transferring to the frames.

Small Ferns in most private gardens are a great help in all sorts of decorative work, but there is always considerable trouble experienced first in getting them, and afterward in keeping them small enough for dinner-table work. Last year we sowed a flat with spores of *Adiantum cuneatum*, and raised over a thousand plants. The spores were sown in January from fronds taken off old plants and laid in paper to dry; the flat was filled with the soil worked out of the Fern-roots used for Orchid potting; the top was sifted very fine and well watered, and the spores sown the next day. All this is simple enough, but the trouble begins when the young plants

are large enough to be transplanted into other flats; however, with care, the loss will be very small and the gain considerable. The varieties of *Pteris* are common enough as self-sown plants, and it is only with the rare kinds that it is worth while to take the time and trouble to raise plants from spores.

If plenty of heat is at one's disposal it is better to get in cuttings of *Crotons* soon. They take some time to root, and will make fine plants in a season if the cuttings are taken early in the year and grown on rapidly. *Crotons* make fine decorative plants for the house and stand well in such conditions. They light up well and show most brilliant colors if grown with plenty of light in the growing season. They are not of much value in this state for outdoor decoration in summer, but farther south they are superb; I have seen them especially rich in color, in the city of Washington.

Seeds should now be selected from well-berried and shapely plants of Jerusalem Cherry, and sown the first week in January to produce good plants of a serviceable size for next fall. We have grown Benary's dwarf strain for several years, and these plants are most serviceable at this time of year. They are all thrown away when their season is over, and the older plan of cutting back and keeping over is superseded by sowing seed early and planting out-of-doors in summer.

Hybrid Roses that are wanted for early spring must now be put in a cool house, where the temperature does not exceed fifty at night for a start. We have adopted the plan of growing all in boxes now, and find this much the better way. If the plants have been two years in the same soil they may be taken out and planted in fresh material before starting them. The change does not cause much check if the work is carefully done, and if, as is most likely, the boxes are in an unsound condition. We are using Cypress lumber now for all boxes for use in the greenhouse. It is as cheap as good Pine and lasts much longer.

South Lancaster, Mass.

E. O. Orpet.

Cyclamens.

TO the lover of *Cyclamens* these plants are most interesting now when they are coming into bloom, and especially so to any grower who, in former seasons, has taken the trouble to cross some of the varieties and to save their seeds. During recent years the varieties have been greatly improved, but there is still room for further advance, which means a more compact habit of growth and larger, well-formed flowers, of distinct and pleasing colors. In form of flower we aim to have long, broad petals, smoothly cut and erect, so that the flower has a compact and neat appearance. We often find it necessary to cross with flowers of inferior shape for the sake of their brilliant colors, and in many cases it takes several years of careful crossing before a really good form of flower is obtained. The plants selected for crossing should be set apart from the others and carefully labeled when they are in bloom. When the flowers are fully developed the pollen is easily shaken from the stamens on to a piece of paper or glass, and can be transferred to the other flowers as desired, with a camel's-hair pencil. The glass or paper must be carefully cleaned after each operation, so that the varieties may not become mixed. The seed plants must be carefully watered. An occasional application of weak liquid-manure is required if they are in any way pot-bound; this is necessary to insure sufficient nourishment for the plants and the proper development of the seeds. The seeds need close watching when they are ripening, as the capsules open when ripe and the seed is apt to be dropped and lost. Perhaps the best time for sowing the seed is during the month of October. It should be sown in pans or shallow boxes, which must be well drained. A mixture of leaf-mold and sand should be used, and the seeds scattered evenly over the surface and covered lightly with sand. They should be sprinkled with water through a fine rose and covered with glass. They should be placed in a temperature of seventy-five degrees and kept moist, but not soaked with water. When the seedlings have formed two or three leaves they will be large enough to handle, and should be transplanted into shallow boxes, about an inch apart each way, and the same compost used as before. Some sow the seed thinly in rows, and save transplanting by leaving them in the seed-box until they are large enough to be placed in pots. We find the change into fresh soil advantageous to the growth of the young plants. When the bulbs are about as large as peas they should be placed into thumb-pots, using the same compost for the first potting, but for the successive pottings a little pulverized sheep-manure should be added. About three shifts will be required, the final one into six-inch pots. During the winter and early spring months the plants should be kept in a light, airy house with a night temperature of sixty

degrees, and sprinkled overhead twice a day, but after the weather is warm enough they will do better in a cold frame, the pots being plunged to the rim in leaves, and the plants shaded lightly during the hottest part of the day. Plenty of air by night and day should be given when the weather is favorable. Watering and syringing must be carefully attended to, and a sharp lookout must be kept for green fly and other insects, as they would soon destroy the plants if allowed to get a footing. Should they appear, the plants must be fumigated or dipped in a solution of tobacco-water or other insecticide; the latter method is more troublesome, but is the more effective.

Tarrytown, N. Y.

William Scott.

Spraying for Black-knot upon Cherries and Plums.

IN the spring of 1893 some experiments were begun at the Cornell Station to determine the value of the Bordeaux mixture in controlling the black-knot of Plums and Cherries. This disease has proved fatal to so many trees, and even entire orchards, that it is a continual menace to the growers of these fruits. It probably has caused greater losses in New York than the dreaded peach-yellows, and during some seasons it has spread with such rapidity that all efforts for its control were practically useless. The disease has consequently had its own way in the large majority of cases.

All scientists now agree in ascribing the cause of black-knot to a fungus; but, although the parasite has long been known, its life-history has not yet been completely worked out. It is known, however, that the fungus produces large numbers of spores, and these are supposed to obtain an entrance into the host plant some time during the warmer months. Just how or when this takes place still remains to be shown. Humphrey says * that the knots first appear in the fall as "slight swellings of the branch." I have failed to find any distinct indication of the knots before early spring; yet there appears to be little doubt of the fact that most, if not all, of the newly infested parts fail to show the presence of the fungus by the formation of new knots until the following spring or early summer. In other words, it now seems probable that infection takes place during one season, but well-developed knots do not appear until the following year.

Several experiments were planned with the above theory as a basis. The fungicide used was the Bordeaux mixture, as this has become to be recognized as our most efficient compound for the prevention of fungous diseases. The trees selected for the work were Plums and Cherries, but only one case, that of some Cherry-trees, will be here mentioned. The trees were mostly sprouts which had been allowed to grow to a height of eight to ten feet. They sprang from the roots of some Morello trees which were set many years ago, and at the time of the beginning of the treatments the old trees and the younger ones were thoroughly entangled, and they were also well covered with knots. The thicket, for so it might be called, was divided into two nearly equal parts by cutting out the brush on a line passing nearly through the centre. One part was sprayed, but the other remained untreated. No knots were cut out during the first year.

The first application was made March 29th, 1893, and this was followed by others upon the following days: April 18th, May 6th and 30th and June 13th. Notes taken June 13th show that new knots were forming as abundantly upon the treated as upon the untreated half. No further treatments were made during this year.

The first application in 1894 was made April 9th. This was repeated on the 25th of the same month, and at this time all the knots were removed from the entire thicket. They appeared to be equally abundant upon each plot, and for greater accuracy in drawing conclusions, the number cut from each side was counted. Additional applications were made May 21st, June 6th and 27th, July 10th and 20th and August 1st.

On November 26th all the knots were again cut out and counted. A comparison of the numbers of knots cut in the spring of 1894 and of those cut in the fall should indicate to a greater or less degree the value of the treatments. But whether the treatments of 1893 are wholly or only partially instrumental in bringing about the final result cannot now be stated with certainty. The results were these:

In the spring of 1894 the number of knots cut from the unsprayed trees was 2,002, and from the sprayed trees 1,155.

In the autumn of 1894 the number of knots cut from the unsprayed trees was 3,466, and from the sprayed trees 165.

These figures show an enormous gain in favor of the sprayed portion. And this gain is emphasized still more if it is as-

sumed, as may justly be done, that the same ratio of increase in the number of knots shown in the unsprayed plot would also have taken place in the sprayed portion, provided no treatments had been made. In this case the 165 knots cut in the fall must be compared, not with the 1,155 knots cut in the spring, but with 2,000, since this is within a fraction of the number assumed to have been produced, had no application been made.

It cannot be held that absolute protection has been effected by the treatments, but it is not very often that such a statement can be made, even with plant-diseases, which are now regularly treated by the use of fungicides. One must also take into consideration that the sprayed trees were standing so near to the other portion of the row that the branches of the two lots almost touched each other. In addition to this, the knots had been allowed to remain on the trees until all the winter spores had been disseminated and the spread of the disease had been favored as much as possible. If we knew more regarding the time and manner of infection we should know better when and how to apply the treatment so that it would be most effective. If the results of further experimentation agree with the case mentioned above, we may soon have a definite direction for the treatment of this fungus as we now possess in the case of other plant-diseases over which we once had no control, but for which we now have practical and efficient remedies.

Cornell University.

E. G. Lodeman.

[The practical importance of experiments on the best way of preventing diseases caused by fungi is so great that we invite attention to a few points in the interesting account given above. The fungus producing the black-knot has two well-known forms of spores—the ascospores, which mature in midwinter and are discharged in early spring, disappearing usually during the month of April, and the conidia, which mature in early summer. With regard to the existence of other forms of spores information is very scanty, but it is probable that, whatever may be the other forms, they mature in the autumn, or, at least, in late summer. Since the number of knots on the sprayed and unsprayed trees was not counted before the spraying, one cannot be certain that the numbers 2,002 and 1,155 do not represent the original proportion of knots on the unsprayed and sprayed trees previous to the experiments, especially in view of the statement that at the time the knots were cut and counted "they appeared to be equally abundant upon each plot." In other words, while at a rough estimate they seemed equally abundant, on actual count they were found to bear the proportion of 4 to 2.3.]

A comparison of the figures given for 1893 and 1894 is interesting. On April 25th, 1894, all the knots were removed from both the sprayed and unsprayed trees, and yet on the following 26th November there were 3,466 knots on the unsprayed, and only 165 on the sprayed trees. This result, so very different from that of the previous year, leads us to examine more closely into the method of the experimenting during the two years. In 1893 the trees were sprayed on March 29th, April 18th, May 6th and 30th and June 13th; that is, they were sprayed at a time of the year when the Bordeaux mixture might be supposed to destroy the ascospores which were germinating and capable of producing new knots. On the other hand, the conidia of 1893 would not be matured naturally until after the date of the last spraying.

In 1894, however, the dates of spraying were April 9th and 25th, May 21st, June 6th and 27th, July 10th and 20th and August 1st. In 1894, therefore, the spraying began at a date when some of the ascospores might already have germinated, and was continued during the period when the conidia would have matured and germinated. We might then suppose, assuming the favorable result as shown by the proportion of 3,466 to 165 in November, 1894, to be due to the spraying, that the conidia were decidedly more active in spreading the knot than the ascospores. This involves also the supposition that the knots removed in November, 1894, were the result of infection by conidia during the summer of 1894. In such a case the knots, judging by previous experience, would have been small. On this

* Eighth Annual Report Massachusetts State Agricultural Station, p. 205.

point no statement is made. If this supposition is not correct, the question arises, How did the knots cut in November, 1894, arise? All the knots, both on sprayed and unsprayed trees, were removed on April 25th, 1894. If we admit that the removal was thorough, which implies that the branches were cut off several inches below the old knots, we cannot suppose that the new knots came from the continued growth of the mycelium of the old knots. If we are not to suppose that the new knots came from infection by conidia of 1894 we are forced to believe that they came from infection either by the conidia of 1893 or by infection from ascospores of 1894, which germinated previous to April 25th, when the spraying began. Mr. Lodeman appears to exclude the latter alternative since he states that he has "failed to find any distinct indication of the (new) knots before early spring"; that is, infection by ascospores early in spring, 1894, would not produce distinct new knots until the spring of 1895. We are left, then, with the supposition that the knots of November, 1894, came from infection by conidia of the summer of 1893, at a date when the spraying was discontinued, and we must also suppose that no knots were produced until the summer or autumn of 1894, since they would otherwise have been removed when all the knots were cut off in April, 1894. The action of the Bordeaux mixture in this case must then have been upon the mycelium in the branches before the knots formed, which is hardly probable, for, in other cases, its action consists mainly in checking the entrance of spores rather than in destroying the mycelium already in the interior of the branches.

It seems more probable, if we consider only the evidence given above, remembering how much more favorable the results were in 1894 than in 1893, and that in 1894 the dry months of summer especially favored spraying, that the great good done by the mixture in this case was by destroying the conidia produced in 1894. Against this supposition is the belief, held not only by the writer, but by many other mycologists, that the conidia matured in summer do not produce knots the same autumn. From the present experiments one is lead to ask, Is this view, held by many botanists, correct?—ED.]

Correspondence.

Pearson's Ironclad Grape.

To the Editor of GARDEN AND FOREST:

Sir,—In 1873, when the Grape-rot became epidemic at Vineland, New Jersey, I learned from Colonel Scott, then the President of Pennsylvania Railroad Company, that on his grounds near Darby, Pennsylvania, was a wild native Grape-vine, the fruit of which his gardener reported "free from the rot." I secured cuttings of this vine, and when they fruited I named it the Scott Grape. Later on, my father, then aged seventy-six years, told me he had gathered grapes from this old vine when a boy, about the year 1806, when the Scott place was owned by his great-grandmother, Mrs. Ash, and this wild Grape-vine, then an old one, furnished grapes for the neighborhood. There were then no Grapes cultivated in this country. This vine was known in its vicinity as the Ash Grape. It was said to have been bearing fruit when my ancestor, John Pearson, landed with William Penn at Chester, on the river Delaware.

Finding that its fruit was good and that it did not rot, I called attention to it as Pearson's Ironclad Grape, sending vines, cuttings and seed of it to France, Spain, Australia and California. French wine-makers pronounced it an excellent Burgundy Grape. At our National Viticultural Convention, in Washington, District of Columbia, 1886, I exhibited wine from the Ironclad, and it attracted much attention. Mr. Charles A. Wetmore, President of the Convention, styled this Ironclad juice, on account of its deep color, a true native American Ink! Writing, made with this juice, May 20th, 1886, is yet quite legible in 1894.

When Professors Viala, of France, and F. L. Scribner, Chief of Division of Vegetable Pathology of our Department of Agriculture, visited my vineyard in 1887, to inaugurate experiments against fungous diseases of the vine, we saw Pearson's Ironclad fruiting healthfully in the midst of rotting Concord.

It was thought that this resistance to the rot germs might be due to a peculiar thickness or toughness of the grape's cuticle, but, upon comparison under the microscope of the skins of berries of the Concord, the Ives and the Ironclad, the professors pronounced the skin of the Ironclad the thinnest.

This vine has fruited here annually since 1876, yet its grapes have never rotted. Its foliage is infected by mildew, *Peronospora Viticola*, but this on the leaves does not harm the vine or its fruit. Perhaps this is because this Ironclad vine never stops growing until freezing weather stops it. It makes fresh canes and foliage constantly, until all are killed by frost. The sap seems to be never dormant here. No matter whether pruned in autumn or in the winter the cuts always bleed in mild weather. It is wonderfully vigorous, a cross apparently of *Vitis Riparia* and *V. Labrusca*. Its flowers have reflexed stamens, and, consequently, it is capricious in fruiting. If rains occur during the critical period of its blossoming its clusters are defective. I find, however, that this damage may be averted or mitigated by planting near it the male *V. Rupes- tris*, which blooms at the same time.

Clusters of Ironclad are small, compact, shouldered, sometimes doubly so; the size of the berry between that of Concord and of Clinton; the color black, and the juice a royal purple. It flowers early; sets fruit before Concord blossoms open; is fully colored by August 10th, but not fully ripe before September 25th; and the berries will hang fast on the vine till December.

Though good to eat when ripe, it is of no value for market as a table grape. It is essentially a wine grape. It makes a good stock to graft other varieties on, and for this is used in France and Spain, as it resists the phylloxera.

I have grafted on it other varieties of our Grapes, especially the Catawba, which is thus improved in quality and ripens earlier.

On its own roots this Ironclad is almost too rampant. The largest crop of grapes that I have taken in one season from one vine, when permitted to extend itself, was 396 pounds.

Vineland, N. J.

A. W. Pearson.

Recent Publications.

The Flora of Nebraska, edited by the members of the Botanical Seminary of the University of Nebraska.

The members of the Botanical Seminary of the University of Nebraska, under the inspiration and instigation of Professor Charles E. Bessey, have for a considerable time been actively engaged in a botanical survey of that state, and have now begun the publication of an elaborate illustrated Flora. The arrangement of the Flora, Professor Bessey tells us, in his short introduction, will be from primitive and simple forms to those which are derived or more complex. Two parts have recently appeared. The first, embracing sixty-eight pages, illustrated with twenty-two plates, contains the description, chiefly by Mr. De Alton Saunders, of the green plants belonging to the Protophyta and Phycophyta, and of the fungi of these groups, by Messrs. Roscoe Pound and Frederick R. Clements. The second part, with nine pages and fourteen plates, by Mr. Albert F. Woods, is devoted to the Coleochaetaceæ and the Characeæ. It is proposed to complete the work in twenty-five parts, the twenty-fifth being devoted to a catalogue of the plants of the state, to which will be added a host index of the parasitic fungi.

The region embraced within the limits of the state of Nebraska, extending from the valley of the lower Missouri to the eastern base of the outlying ranges of the Rocky Mountains, is one of the great meeting grounds of the eastern and western floras, which mingle here more freely, perhaps, than in any other part of the continent. According to Professor Bessey, "a careful study of the flora of Nebraska shows that not only all the great branches of the vegetable kingdom are represented, but that of the fifteen classes fourteen are represented, and that of the fifty-four orders forty-three are represented, while of the three hundred and eighty-six families there are representatives of about one-half. On the other hand, of the one hundred and seventy-five thousand species of plants now known, probably little, if any, more than two per cent. occur within our borders."

Notes.

Mr. Edward L. Greene, assistant professor of botany in the University of California, has been appointed professor of botany in the new "Catholic University of America," in the city of Washington.

The next meeting of the Western Horticultural Society, which is to be held in Rochester on the 23d and 24th of January, will commemorate the fortieth anniversary of that enterprising and useful organization.

A green-flowered sport of the *Chrysanthemum Vivand* Morel has appeared simultaneously in two different English collections. The variety has been propagated, and makes a healthy plant with heads of light pea-green florets, which are said to be attractive.

It is a good suggestion in *Meehans' Monthly* to gather seed from the plants of *Cosmos* which bloom the earliest. It is probable that by persistent selection a strain of early-flowering plants might be secured, and this would be a great gain in the case of a species which is always full of buds when the frost kills it.

Last week, after two or three days of warm rain, plants of *Daphne Cneorum*, in exposed locations, showed many full clusters of their pink flowers, fairly well formed. Of course, they lacked the delightful fragrance which they have in warm weather, but they looked as happy when surrounded by their evergreen foliage as any outdoor flower can look in the middle of December.

It is announced that the large growers of bulbs of *Lilium Harrisii* in the island of Bermuda have consolidated under the name of the Bermuda Bulb Company, with Mr. Frank Pierson, of Tarrytown, New York, as general agent for America and Europe. The object of the combination is said to keep prices firm, to supply high-grade bulbs only, and to correct the competition in cut flowers.

Another small consignment of five hundred pounds of the best English filberts, which are imported in the husks, has just been sent to Joseph Hahn & Sons, of this city. They come in small barrel packages, each of which contains a hundred pounds, and sell at retail for fifty cents a pound. These nuts have none of the dryness or toughness of the ordinary filberts, but have a crispness and delicacy of flavor which is altogether distinct.

In an address before the Boston Florists' Club, Mr. P. O'Mara, of this city, suggested that flower shows might be made more interesting and instructive if some horticultural operations could be seen in progress. For example, a booth where budding and grafting was performed by some expert, who would also be ready to answer the questions of visitors, would prove a certain attraction. Plants illustrating proper and improper pruning, plants showing the work of various insects and fungi, with their correct names, and object-lessons in other horticultural matters, would be sure to add to the popularity and usefulness of these exhibitions.

Few plants have occasioned more discussion in this country than the Japanese Wineberry, *Rubus Phoenicolasius*, and it is now receiving considerable attention in the horticultural journals of Great Britain. The fruit as it appears there is described as bright red, of an agreeable, brisk flavor, with none of the mawkish taste which makes blackberries unpleasant to some persons. The fruit begins to ripen early in September, and continues for three weeks. The bright color of the stems of the plant in early spring before the leaves appear is caused by its abundance of slender spines. Its appearance at this season is considered highly ornamental, so that it is recommended for the shrub border for this reason alone.

Large and beautiful Japanese persimmons, from California, are still in the market, and enterprising growers of this fruit are endeavoring to popularize it by every means possible. One method of work in this direction is to wrap every fruit in a square of thin paper on which are printed the following directions: "Place this fruit on a shelf or sideboard for ornament until it becomes soft. It will shrink somewhat and turn to a darker color; it must not be eaten until it is soft in every part, which will be the case if it ripens properly. It should then be peeled from the apex. The thin skin will leave the pulp readily." To this we may add that a Japanese persimmon, when set in a cut-glass or silver cup of proper size is a beautiful object. It is also very nutritious, and when properly

cooled its delicate flavor is very refreshing. It certainly must prove one of our most popular dessert fruits when better known.

The disastrous experience with Christmas trees last year, when dealers were not only unable to dispose of their stock profitably, but were compelled to go to the expense of carting it away in addition to the original outlay for cutting and bunching and transportation to the city, has had the natural effect of reducing the supply in the market this year. No more than eighty car-loads are now on sale, as against 140 car-loads last year. Prices, however, rule much higher. Bundles containing four trees, six feet tall, sell this year for seventy-five cents to a dollar at wholesale, and tall trees twenty-five feet high bring \$5.00 to \$8.00 each. This is for the best trees from Maine, which always command the highest prices, because they are shorter-jointed, better furnished and are said to hold their foliage better than those from the Catskills, the Adirondacks and western Massachusetts. Nearly half of the entire supply comes from Maine. As usual, the trees are mostly Balsams, although there are a few Black Spruces and Hemlocks.

A correspondent of the *Revue Horticole* states that the depth to which the seeds of Half-long varieties of Radish are covered makes a great difference in the roots. Experiments were made during the year at the establishment of Messrs. Vil-morin, where the seeds of three kinds of Radishes were sown in the beginning of July in two beds near each other and prepared in the same manner. In one bed the seed was covered to a depth of four-fifths of an inch, and in the other it was planted twice as deep. In the case of all the varieties the seed most deeply covered produced roots which were longer, more regularly cylindrical, cleaner, and in every way better formed than the others. Many of the roots from the shallow-covered bed were short, misshapen, and had fibrous rootlets on the sides. This point is well worth attention in growing Radishes for the home-garden, while to market-growers, who wish to have crops of roots which are so regular in size that they can be bunched for sale without any lost time in sorting, the gain from deep planting would be very considerable.

The planting of *Swainsonia* for cut flowers in this country began, we believe, in Philadelphia, and it is still more largely grown near that city than elsewhere. In the last number of the *Florists' Exchange* it is said that David Cliffe, of Germantown, has a house ninety feet long by sixteen wide, with centre and side benches, filled with these plants. These benches were filled with soil without any manure, and the plants put in about eighteen inches apart last May. They are now about three feet high, very bushy, and covered with flowers. As *Swainsonia* has a habit of climbing, some method must be devised for keeping it dwarf. To bring this about, the surface of the soil is not loosened up, but is allowed to become hard under constant watering. The plants thus treated are short jointed, and they flower freely at every joint. The flowers are cut and put in water in a cool place ten or twelve hours before shipping, and they have been shipped one hundred and twenty miles and were in good condition for use four days later. Single flowers sell at the prices of carnations, and Mr. Cliffe's house will yield five hundred sprays for Christmas week, at from eight to ten cents each. No manure-water or any other feeding has been resorted to, as the plants seem to flower better in poor soil than otherwise.

An illustrated bulletin of twenty-odd pages, *Farmers' Bulletin No. 20*, has just been published by the authority of the Secretary of Agriculture, under the title of "Washed Soils and How to Prevent Them." Along the banks of the Ohio, and in many portions of the south, there are thousands of acres once under cultivation which are now furrowed all over with gulleys, like the wrinkles of age, and abandoned to brush and briars. All the surface of good agricultural soil which has accumulated by the slow decay of rocks and the accumulation of humus for centuries has been washed away in a few years, owing to the carelessness of man. The purpose of this little treatise is to show how to prevent this excessive erosion and the best means of recovering fields which have already lost the greater part of their tillable soil. The methods of treatment by chemical means which change the texture of the soil, by cultivating and underdraining, by reforesting, and by binding the soil with Grass and other vegetation, are explained as clearly as possible in the brief limits of this bulletin, and the illustrations are really helpful additions to the text. This bulletin ought to be studied by every farmer who has fields that are subject to the denuding action of running water, and every observing reader will find it interesting.

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Forestry in Pennsylvania.

IT is two years since the Legislature of Pennsylvania passed an act creating a forest commission charged with the duty of making a survey of the state, and to collect facts as a basis for intelligent legislation. We have had occasion to allude more than once to the satisfactory way in which the work of this commission was progressing, and we have borne witness to the fact that Professor Rothrock's illustrated lectures were doing much to enlighten public sentiment in other states as well as in Pennsylvania. We are not aware that the commission has yet made a final report embodying outlines of all the forest-laws considered necessary, but we have received copies of two bills which are to be introduced in the next Legislature, and which, it is to be hoped, representatives of that state will promptly enact as forward steps toward an enlightened forest-policy.

The first of these bills provides for the establishment of three separate forest-reservations within certain counties named, each of which shall contain no less than 40,000 acres of land in a continuous area. It also provides that at least half of the lands chosen for these reservations shall have a minimum altitude of eight hundred feet above sea-level, and that all of the land shall be of a character better suited to the growth of trees than to mining or agriculture. The Forest Commission is to select these lands, and is authorized to purchase them at prices not exceeding two dollars an acre where this can be directly accomplished, and where this is not possible, full power is given to condemn such lands as reservations for the use and behoof of the commonwealth, subject to such conditions as the legally constituted authorities may impose. It is further provided that the State Geological Survey shall examine the land so acquired and make a report, with accompanying maps and illustrations, upon their value as water-sheds and reservoirs; and that the State Board of Health, the State Board of Agriculture and the Fisheries Commission shall each report every year upon the uses and value of these reservations in relation to the several subjects within their jurisdiction. There is no doubt that these reservations could be made larger to the advantage of the

state, but it seems to us the part of wisdom to begin moderately as the framers of this bill have done. The subject is one of growing interest, and if the land thus acquired is administered properly, it will certainly create a demand for more, and this demand can be met as public sentiment gathers volume and force.

The second bill which we have received provides ways and means for educating the people by illustrated lectures on forestry and economic zoölogy. But, while the state is in this mood for reform, it is hardly probable that the Legislature will neglect to make some special enactment for the prevention of forest-fires, which have been so destructive in that state. No efficient guard can be set over the forests without money. Men who can be trusted to serve the state in this direction must be paid just as firemen must be paid for their services in cities. As the case now stands, the great burden of extinguishing fires, when they are extinguished, falls upon the poorest counties, while every part of the state is quite as much interested in the suppression of these fires as these mountain regions. The obligations in this particular ought to be equalized in some way. The State Grange has lately passed some strong resolutions on forest-fires and in favor of the reservation scheme, and their preamble sets forth the facts that floods of increasing severity, due to the removal of large bodies of timber from the high-water sheds of the state, are yearly sweeping away bridges and fences, destroying roads, washing away the soil and covering fertile lands with gravel, and they argue that the time has come for the state to help protect the sources of water-supply from forest-fires and forest-destruction of every sort.

Since much of the agitation in favor of national forestry can be traced to the zealous labors of the commission, it would seem to be the part of reason to make this body permanent—an established element in the administration of the state, and as regularly provided for by legislative appropriation as any other branch of the Government. Certainly the forest interests of Pennsylvania are of sufficient magnitude to deserve such recognition. It may be a question whether the Forest Commission ought to be subordinated to the State Board of Agriculture, or should have an independent position of its own; but, in any event, there is no doubt that this great state ought not to delay the establishment of some permanent body whose constant duty it shall be to look after the interests of its forests.

Destroying Weeds by Act of Congress.

MORE than fifty years ago some of the political farmers of New York state were thrown into a panic on account of an invasion of the Canada Thistle, and it was publicly predicted that this weed would "establish its fatal empire over the whole of North America." Experience has proved that the Canada Thistle is a bad weed, but there are limitations of climate which check its predicted triumph over the continent, and, like other weeds, its progress is always arrested by a barrier of good farms; that is, where the best crops are produced weeds never gain a foothold, and never have a chance to grow. This law is universal. Weeds do little injury to good farms, and, on the contrary, good farming exterminates weeds. This fundamental truth should be taken into consideration whenever the country becomes agitated over some new weed, and although the Russian Thistle is not likely again to frighten Congress from its propriety, other foreign weeds will doubtless make forays into our unoccupied lands in times to come, and we ought to be prepared for them beforehand.

The conquering progress of the so-called Russian Thistle and the bill before Congress to appropriate a million dollars for the relief of the people whose homes and fortunes were said to be threatened by it, furnished the text for a paper before one of the sections of the American Association for the Advancement of Science last summer, which we hope may be published in some of the journals devoted to

political science. Professor Bailey read this paper, which showed, in the first place, why this weed has spread with such virulent rapidity. The reason is simply that weeds, like other plants, grow where they can find room, or rather can find conditions of competition into which they can enter prosperously. They may grow in land that is already occupied, just as climbing plants will flourish in dense thickets of shrubbery, or pumpkins grow in a corn-field. What is needed to exclude weeds is not only occupation by other vegetation, but a rotation in which the weeds which come in with one crop may be destroyed by the cultivation of the next. This simply means that the conditions of successful agriculture are those against which weeds can never prevail. The Daisies have not ruined the good meadows in the east, but they usurp control of soil which has been already exhausted and where the grass is not properly encouraged in the struggle. It is along roadsides and in neglected fields that Canada Thistles flourish. In the untilled plains of Dakota or over the leagues of tilled land where wheat follows wheat, yielding in endless succession year after year eight or nine bushels to the acre, the conditions are just such as invite such a sturdy intruder as this Russian weed. There are more weeds in the west than in the east because there is more waste ground.

New countries always suffer more from weeds than old ones do, because the felling of the woods and the breaking up of the prairies disturb the equilibrium of things, and every plant begins to make a fight to occupy and possess the land. Agriculture in these recently settled regions is usually one-sided, and this makes an easier conquest for the invading army. The Russian Thistle will never get any dangerous lodgment in a well-tilled farm, and where it now exists proper agricultural practice will quickly subdue it. Indeed, the only way to subdue any weed is to keep profitable crops growing. Taking this view of the case, what sort of a warfare could the Government wage against this Russian Thistle with a million dollars? If it should hire men to pull up and burn every weed they found there would be some seed left, and in a year or two the crop would be as abundant as ever. The only way to rout the weeds is to revolutionize the prevailing agriculture, and since Government is not conducting the farms of the west it is hard to see how the owners of these lands can be compelled to practice a rotation of crops that would secure them from evil. The fact is, that this trouble, like the plague of rabbits in Australia and the cardoons on the pampas, is one of those evils which always come to a new country where established conditions are overturned. It comes to remind settlers of the weak points in their agricultural systems, and although the lesson is pretty painful in the outset, it will, perhaps, for this reason be remembered longer. But, after all, the settlers in new countries take these chances, and they must help themselves. No doubt, Government can do something in the way of instructing farmers how to improve their farm methods, but, in the terse words with which Professor Bailey concluded his paper, "Weeds are beyond the reach of the sheriff; laws cannot control a vacancy in nature."

The Hardy Catalpa in the West.

IN the earlier days of tree-planting on the prairies the hardy Catalpa, *C. speciosa*, was recommended without reserve for the entire region beyond the Mississippi River south of the latitude of Minneapolis, but experience has proved it to be of more limited adaptability, and its range of satisfactory growth is about the second or third tier of counties from the southern line of Iowa and Nebraska. It can resist neither cold nor drought, hence it is not worth planting west of the ninety-ninth parallel. Within its range, however, it is a tree of peculiar value to the western planter. In south-eastern Kansas, at Farlington, there is a plantation of over five hundred acres, most of which is Catalpa, which was set between 1878 and 1882.

The trees were planted four feet apart each way, and now average about twenty-eight feet high, with trunks four inches in diameter at three feet from the ground. This is a pure growth, and it illustrates some of the peculiarities of this tree. Unlike Black Walnut grown in close mixed plantation, and Wild Cherry, Catalpa does not clean itself well; the small lateral branches are very persistent. In October, while going through the Farlington plantation, I observed that these dead branches were very difficult to break off, and they will probably adhere to the tree at least two years longer. The trunks are straight and tall, as grown at Farlington, but these dead lateral branches, clothing the boles of the trees almost to the ground, are sure to make knots or faults in the timber. The Catalpa is a light-demanding species, and it leaves out late in the spring and drops its foliage at the first frost, so that even when planted only four feet apart there is quite a weed-growth beneath the crown. It is very dense-foliaged in midsummer, but the grass and weeds get a hold before the trees are in full leaf; hence the Catalpa is not a soil-improver, and should always be planted with some shade-enduring species. I am not aware of its having been tried, but I should think the Russian Mulberry a good tree to alternate with Catalpa; if additional kinds were desired, a good mixture would be one-fourth Mulberry, one-fourth Catalpa, one-fourth Wild Cherry, one-eighth Black Locust, one-sixteenth Burr, or White Oak, one-sixteenth Black Walnut.

At the Kansas Agricultural College the Catalpa has been used as a nurse-tree for Oaks, but it is not satisfactory; it not only fails to keep down weed-growth, but at seven years from planting the Oaks are completely overtopped by the Catalpas.

At the State Forest Experiment Station, Ogallah, Kansas, in longitude ninety-nine degrees, forty minutes west, latitude thirty-nine degrees north, the Catalpa grows very poorly, the climate evidently being too dry for it. At Des Moines, Iowa, it kills back quite badly in severe winters, but there are good-sized trees in several lawns.

The Catalpa was given a thorough trial at the South Dakota Agricultural College, but it proved altogether too tender for that locality.

In the Farlington plantation, Catalpa Catalpa occupies several acres, but it cannot compare with the hardy Catalpa as a timber-tree; it has a sprawling habit and is not forced into tall growth when planted four by four feet.

Washington.

Charles A. Keffer.

Foreign Correspondence.

London Letter.

JUDGING PLANTS was the subject of an interesting and timely lecture, last week, by Mr. James Douglas, one of the very best all-round gardeners in England, and, perhaps, the most experienced of judges at flower-shows. To judge collections of garden produce, whether it be plants or flowers or fruit or vegetables, and to award the prizes satisfactorily one must know a great deal not only about the capabilities of the plants, but what art and skill are necessary in their production, and even then he is apt to make awards which will be unpopular unless his sympathies are in line with the aims of the growers. I have known capable judges who have been severely criticised for giving most points to size when form was considered of first importance, or to color when size ought to have had first place. Then it is so easy to make a mistake by calling something a fruit which the exhibitors call and show as a vegetable, or a plant herbaceous when it is popularly, although not strictly properly, excluded from that class. For instance, it is not permitted to show Lilies or Hyacinths or Tulips in a collection of herbaceous plants. Old hands know the limitations well enough, and do not lose points through mistakes which the beginner among competitors can easily make. As Mr.

Douglas says, although the real value of fruit is in flavor, yet, as a rule, at exhibitions size and color only are considered. The same applies to vegetables; the big potatoes, cauliflowers and cucumbers, which only a cow would eat with any pleasure, almost invariably count first at exhibitions. It is quite time that an effort should be made to reform this kind of thing, as horticulture really loses rather than gains when characters of no real value are allowed to count for a great deal at exhibitions. Mr. Douglas recommended that more care should be taken in defining the character of the classes in the preparation of the schedule, as judges ought properly to interpret the schedule literally, whatever the consequences. But, so far, very little care has been exercised in the preparation of the schedule, and the result is, in consequence, more or less squabbling between exhibitors, the committee and the judges. Mr. Douglas's suggestion has been taken up by the Royal Horticultural Society, who have appointed a committee to draw up a code, or guide, to judging which shall be explicit and cover all questions likely to arise at exhibitions of horticultural produce. If well done, and there is no reason why it should not be, this code will be to horticulturists what the Marylebone Cricket Club rules are to all cricketers—the guide and arbitrator upon whose dicta all are content to rely.

VEGETABLE PATHOLOGY.—A large treatise on the diseases of trees, originally prepared by Professor Hartig, of Germany, and now translated by Dr. Somerville and revised and edited by Professor Marshall Ward, has recently been published by Macmillan & Co., and favorably noticed in the English press. [This work has been reviewed in *GARDEN AND FOREST*, page 488.—Ed.] It is essentially a diagnosis of diseases among trees, and does not prescribe cures for them. The easy guide to a knowledge of plant-diseases and how to prevent or cure them has yet to be written. For instance, I cannot get any one to tell me exactly the nature and cause of spot in Orchids and how to prevent or cure it; the cause of and cure for canker in fruit-trees; to explain the sudden death of Heaths or other hard-wooded plants which sometimes die wholesale as if stricken by the plague. There is much learning in such treatises as this last addition to the English literature of plant-diseases, but practical people can get little out of it. First catch your hare is a good proverb, and first know the nature of the disease before attempting a cure is likewise sound advice. If some one would collect, condense and simplify all that has been written and is reliable upon the diseases of plants, cultivators would be grateful. Even such subjects as Potato-disease and Corn-smut are not yet worked out so as to be clear to the laity, some of whom declare that while scientific men have, as a rule, limited themselves to tracing the life-history of the disease and deciding what it should be called, practical men have seen that a weak constitution falls an easy prey to a disease which a strong constitution can resist, and have accordingly bred for strength and found salvation. Breeding, however, is not a ready alleviator in the case of diseased trees. Still we are apt to go on struggling with a hopeless cripple when it would be far simpler and easier to burn it and replace it with a healthy youngster. There is much ignorance apparent in the ordinary treatment of trees and shrubs, which often fall an easy prey to some fungal or other disease through neglect of ordinary precautions. By the way, I notice that you do not recommend coal-tar for the dressing of wounds in trees and shrubs. At Kew nothing else is used, and it answers perfectly in all cases. [Coal-tar makes one of the best of coverings for the wounds of trees, and we have often commended it.—Ed.]

There are innumerable "quack" remedies and cures for plant-diseases, which are often recommended by those who ought to know better. For instance, a recently published work on horticulture contains a chapter by a specialist on Fruit-culture, who gravely recommends "driving rusty nails into the trunks of fruit-trees as a preventive or cure for blight"! Clearly, therefore, we want some author-

itative guide to plant-ailments and their cure. The following shows that this want is also felt by Continental cultivators:

Vegetable pathology is receiving considerable attention from Continental botanists, and for the purpose of giving the necessary information for the cure and prevention of plant-diseases, a special committee has been established by the Royal Botanical Society of Belgium. This body will meet at the Brussels Botanic Gardens, where nurserymen, horticulturists, arboriculturists, etc., may obtain all the advice science can give on the subject.

ARTIFICIAL MANURE FOR ALPINE PLANTS.—An eminent chemist, Professor Hugo Muller, who is also an enthusiastic collector and grower of alpine plants in the south of England, has concocted a mixture which he applies to all his rock-plants, with, he says, beneficial results. The mixture is composed as follows:

- 40 gallons of water (in paraffin cask).
- 2½ oz. Potassium phosphate.
- 1½ oz. Potassium nitrate (nitre).
- 1½ oz. Magnesium sulphate (Epsom salts).
- 1½ oz. Calcium nitrate.

The Calcium nitrate is prepared by taking 100 ounces or less of chalk, dissolve it in dilute nitric acid until it ceases to give off carbonic acid. This leaves a solution of one and a half ounces of Calcium nitrate for each ounce of chalk.

This is mixed in the paraffin cask and the plants are watered with it about once a fortnight during the growing season. Professor Muller is a gardener as well as a chemist, and, therefore, a safe adviser in a matter of this kind.

THE GLASTONBURY THORN.—The mild weather we have had lately has induced this Thorn to flower with exceptional vigor and a little in advance of the usual time. I have seen specimens from Bath and several other places in the south of England, bearing abundance of new leaves and flowers, as well as the ripe fruit. The fruit is said to be from the second or spring lot of flowers. It is the *Crataegus oxyacantha*, var. *præcox*, of Loudon, and is an interesting plant apart altogether from the legend with regard to its origin, which is that Joseph of Arimathea visited Glastonbury, in Somerset, to preach the gospel, and after toiling up a hill, now known as Weary-all-hill, he stuck his staff into the ground and went to sleep. When he awoke his stick had taken root, and eventually it grew into a tree, which always blossomed on Christmas-day. Glastonbury Abbey was built near the spot where this tree stood. Loudon says there is no reason why Joseph's stick should not have been the origin of the Glastonbury Thorn, and its habit of flowering in midwinter is nothing very extraordinary, seeing that Chestnuts, Apples, Pears and other trees will flower in late autumn if the season be favorable. The mild weather here this year has affected many plants; for instance, *Jasminum nudiflorum* has been in bloom a month or more, *Chimonanthus* also, while *Abutilon vexillarium*, on a south wall, is still in full bloom. The Glastonbury Thorn opened its first flowers at Bath this year on November 17th, but usually they expand about a fortnight before Christmas.

London.

W. Watson.

I do not dislike garden-walls; it is sometimes a good and consoling thought to reflect that one is in a well-secured enclosure, alone with perfumes, flowers, trees, the air, the sun, the stars, remembrances and reveries, and to know that nobody can come and disturb you. I like walls, but I do not like white walls. I like nothing but old walls. I have one here which pleases me much. It is just as old as it ought to be; if it were a little older it would be given over to the mercy of bricklayers, who would introduce all sorts of new bricks and white stones. As it is, it is gray and black and diversified with the subdued tints of twenty species of Mosses and Lichens. It is crowned with yellow Wallflowers and Ferns, which root in the crevices on its summit, and its base is buttressed by Pellitory and Nettle in masses of richest green.

—ALPHONSE KARR, in *A Tour Round my Garden*.

A lawn amid extended wood affords the same relief as a mass of wood on a wide expanse of meadow.

—*Planting and Rural Ornament*, 1796.

New or Little-known Plants.

Quercus Texana.

STUDENTS of our trees have long been puzzled by a black Oak of the Mississippi valley with leaves like those of the Scarlet Oak or of the Pin Oak in outline, and fruit resembling in some of its forms the fruit of the Red Oak. This tree, which is common in the neighborhood of St. Louis, was well known to Dr. Engelmann, the best-equipped and most experienced man who has made a systematic study of North American Oaks, and it usually appears in his herbarium as *Quercus rubra coccinifolia*, or as *Quercus*, n. sp., or as *Quercus ambigua*. He never published, however, even a varietal name for this tree, but under his remarks on *Quercus rubra* (*Trans. St. Louis Acad.*, iii., 394) speaks of a form of that species which he considered one of the most variable of our eastern Oaks, with "leaves similar to those of *coccinea*, with divaricate pinnatifid lobes, or with leaves smaller and more deeply divided, with fewer lobes, much like those of *palustris*; and acorns always smaller than in the typical *rubra*, and the cup rather deeper." The description is a good one, but he did not realize how widely this peculiar form was distributed, and he had never had the opportunity to see alive the Texas Red Oak, which at one time he referred to *Quercus palustris*, and later considered a variety of the Red Oak of the north.

The first description of the Texas Oak appears in Torrey's *Botany of the Mexican Boundary Survey* (page 206), published in 1859, where it is described as *Quercus coccinea*, var. (?) *microcarpa*, from specimens gathered by Dr. J. M. Bigelow in rocky ravines near the mouth of the Pecos and on the Limpio, in western Texas. It had been collected about the same time by Charles Wright in south-western Texas and at New Braunfels by Ferdinand Lindheimer, whose specimens are preserved in the Engelmann herbarium; and in the second volume of the *Pacific Railroad Reports*, published in 1852, it had been called *Quercus palustris* by Torrey and Gray, who certainly could never have seen the fruit. In Hall's *Plantæ Texanæ* it was named and distributed as *Quercus palustris*, and as *Quercus palustris* it appears in Coulter's *Manual of the Flora of Western Texas* (*Contrib. U. S. Nat. Herb.*), published in 1894. Mr. S. B. Buckley, through his long residence in Austin, had excellent opportunities to study in situ the Texas flora, and in 1860 described this tree in the *Proceedings of the Philadelphia Academy* as *Quercus Texana*, and twenty years later, in the same publication, referred it to *Quercus rubra* as var. *Texana*, the name finally adopted by Dr. Engelmann.

Fifteen years ago I first saw the Texas Oak growing on the banks of the Colorado River, near Austin, and at different times I have seen it in other parts of the state, and long ago felt sure that it could not be considered a form of our northern Red Oak. During the past summer I had the good fortune to pass a day with Dr. Schneck, at Mount Carmel, Illinois, at the junction of the White and Wabash rivers, one of the richest and most interesting tree regions in North America, and it at once occurred to me that the Swamp Red Oak of that country was identical with Buckley's *Quercus Texana*. In company with Mr. Letterman I saw the same tree a few days later upon the banks of the Maramec River, in Missouri, and afterward revisited Austin to refresh my memory of the Texas tree. These field observations and the subsequent examination of most of the Oak material in American herbaria have confirmed my impression that Engelmann's *Quercus rubra coccinifolia* and Buckley's *Quercus Texana* are specifically the same, and that the Texas Oak is one of the commonest and most widely distributed trees of the Mississippi valley.

As it grows in the basin of the lower Ohio River *Quercus Texana* is a tall and noble tree. Dr. Ridgway, in his *Notes on the Native Trees of the Lower Wabash and White River Valleys in Illinois and Indiana* (*Proc. U. S. Nat. Mus.*,

1882, 80), where this tree is referred to *Quercus coccinea*, which does not, however, reach southern Illinois, speaks of it as the tallest Oak of the region, and records the measurement of a tree which had a total height of one hundred and eighty-one feet, with a clean trunk ninety-four feet tall and twenty feet three inches in circumference. The bark, although rather darker, resembles that of the Red Oak; the winter-buds are those of the Red Oak, and the leaves are hardly to be distinguished in outline, texture and in the lustrous green of the upper surface, from those of *Quercus coccinea*, but on the lower surface are furnished, like those of *Quercus palustris*, with tufts of ferrugineous hairs in the axils of the primary veins; in the autumn they retain their green color later than those of other Oaks in the same region, and do not assume the brilliant colors which late in the season make *Quercus palustris* and *Quercus coccinea* so conspicuous. In shape the acorns resemble those of *Quercus rubra*, although they are generally rather shorter and narrower, and the cup, instead of being broad and shallow, is more or less turbinate, and its scales are rather looser and are covered with pale pubescence. Acorns which I gathered near Austin last September were quite pubescent and very distinctly striped, a peculiarity I have not seen on acorns of this tree gathered elsewhere. This striping on the acorns of Oaks is not, however, a specific character that can be relied on, and in other species the acorns are sometimes striped on certain individuals and are not striped on others.

As I know it, *Quercus Texana* is common in the neighborhood of St. Paul and Minneapolis, Minnesota. It occurs at Waterloo, Iowa, in the neighborhood of Rockford, Illinois, in southern Illinois and Indiana, and near Nashville, Tennessee; it is common from the neighborhood of St. Louis, through Missouri, Arkansas and Texas; it was collected by Hale in Louisiana, probably in the neighborhood of Shreveport, on the Red River, and large trees, evidently of the original forest, are still standing on bottom-lands in Carrollton, near New Orleans, where it is often planted as a shade-tree in the streets. It appears to be the Red Oak of Mississippi and Alabama, ranging as far east as Aspalaga, in Florida, where it has been collected by Mr. A. H. Curtiss.

In the lower Ohio basin, *Quercus Texana* grows in swamps or on the low and often inundated banks of streams with *Quercus palustris*, *Quercus lyrata*, *Quercus bicolor*, *Quercus Michauxii*, the *Liquidambar*, *Nyssa sylvatica*, *Acer rubrum* and *Populus heterophylla*. Any one driving through this region, or even traveling on the railroad, can always distinguish it from the Red Oak by its lustrous foliage, although, without fruit, it cannot be distinguished from *Quercus palustris*, with which it is often associated. I am told by Dr. Mohr and by Mr. Letterman that it inhabits swamps in southern Missouri and Arkansas and in the eastern Gulf states. Near Austin it grows on the low, moist limestone hills rising above the Colorado River, in company with *Quercus Durandii* and *Juniperus occidentalis*, but near San Antonio it grows in low wet bottom-lands.

Of the real value of the wood of this tree little is yet known; probably a considerable part of the so-called red oak of lumbermen is derived from it, and it is certain that all the red oak of the south, which is usually considered more valuable than northern red oak, is from this species.

The Red Oak, *Quercus rubra* of Linnæus, which is the most boreal of the Oaks of eastern America, probably nowhere reaches the low coast region of the southern states. Very common at the north and always an inhabitant of uplands, where it usually selects rich and well-drained soil, the Red Oak ranges southward along the Alleghany Mountains to northern Georgia, where it is neither common nor of large size, and westward to Minnesota, Nebraska, southern Illinois, central Tennessee, Missouri and central Kansas. *Quercus palustris*, for which the Texas Oak has so often been mistaken, is also a northern species; it grows in Virginia, a few miles south of Washington, apparently its most southern station in the Atlantic states, and in southern Indiana and

Fig 81.—*Quercus Texana*.—See page 514.

Illinois, and in central Missouri; but the Tennessee, southern Arkansas and Texas specimens that have been referred to this species, all belong with *Quercus Texana*.

Of the range, variation and properties of *Quercus Texana*

I am anxious for more information, and these notes and the illustrations which accompany them are published in the hope that botanists living in the western and southern states will give me, this winter, the benefit of their observa-

tions on the Red Oak group, that they may be included in the forthcoming volume of *The Silva of North America*, which will be devoted to the description of our Oaks.

Of the names of this tree, the oldest is Torrey's *coccinea*, var. *microcarpa*, but *microcarpa*, fortunately, is not available, as it had been used earlier by Liebmann for a Mexican Oak, and Buckley's *Quercus Texana* can be kept up.

The illustration in this issue, on page 515, Fig. 81, represents (1) a fruiting branch of *Quercus Texana* from the neighborhood of Mount Carmel, Illinois, natural size; (2) an acorn from Austin, Texas, natural size; (3) an acorn from a tree growing in the streets of New Orleans, natural size; (4) a winter-bud, enlarged; that on page 517, Fig. 82, represents (1) the type specimen of *Quercus coccinea*, var. *microcarpa* (?), collected by Dr. Bigelow on the Pecos River and preserved in the Herbarium of Columbia College; and (2) a winter-bud from the same specimen, enlarged.

C. S. S.

Plant Notes.

VIBURNUM OPULUS.—This is our native Cranberry-tree, and, although not uncommon in cultivation, should be more frequently planted. It is a strong and quick-growing shrub of good size, flourishing under almost any conditions of soil and surroundings; the foliage is good; the flowers are white, in broad cymes, and are followed in late summer by its bright-colored fruit. In the fruit is the great beauty of the shrub; the berries, when ripe, are a brilliant deep scarlet, having passed through various intermediate stages of reds and yellows; they are borne in large clusters on the tips of the branches, well above the leaves, and keep in good condition until severe frost, after which, although they hang on all winter, they take a duller hue, and are not so attractive. Sometimes they are used for cooking, either as a sauce, as cranberries are prepared, or made into jelly; to many palates the somewhat astringent flavor is not agreeable. The plant is widely distributed over the northern parts of both continents. The common Snowball is a sport from this plant, when the fertile flowers are changed into ray or sterile flowers. There is also a dwarf variety, which makes a compact and symmetrical growth, sometimes effectively used in formal gardening. A form grown at the Arnold Arboretum, from seeds collected among the mountains about Pekin, promises well, the flowers and fruit being larger and finer than the common types. The propagation is by layers, by hard-wood cuttings, or by seeds, which require two years for germination.

DAPHNE ODORA.—Before the days of gas and furnaces the *Daphne* was a favorite house-plant, and the delicious fragrance of its flowers filled many living-rooms from Thanksgiving through the Christmas holidays; now it is rare; in fact, well-grown plants are hard to find. It is a slow-growing greenhouse evergreen shrub, introduced from China into England in 1771; the flowers are white, with purple markings beneath, and borne in clusters; the foliage is a rich dark green of good substance. The cultural requirements are not exacting; it should be grown in a cool house in a rather heavy soil, which, however, should contain plenty of peat and some sharp sand; it should never be overpotted and never be allowed to suffer from lack of water. If carefully handled, it can be planted out in a border, where the growth will be much stronger and the flowers more abundant. The propagation is by hard-wood cuttings in winter.

CESTRUM (HABROTHAMNUS) AURANTIACUM.—This old-fashioned autumn-blooming plant is almost entirely overlooked in the scramble for big *Chrysanthemums*. A native of Guatemala, it has long been in cultivation, and is very desirable, since it blooms from September to December, when greenhouse flowers are least abundant. The great beauty of the plant is in the large panicles of orange-yellow flowers which bloom in profusion on the tips of the summer's growth; they are somewhat waxy in texture, of fair

size and good shape; when used for cut flowers the stems should be short, and more than the usual supply of water given. The plant should be grown in a cool house, and, although it does fairly well in pots under the same general treatment which would be given to *Bouvardias*, the best results are obtained by planting it out in a well-prepared border, and training it on a wall or as a bush. The growth is quick and sturdy, so plenty of room for roots and top must be given. To insure the characteristic abundant bloom the plant must be cut back severely in June; all weak wood being removed, it must be encouraged to make a good growth during the summer months. The tendency to grow after blooming during the winter should be checked, although no harm is done by this growth unless the June pruning is neglected; this winter growth often promises a second crop of flowers, which is seldom realized. The propagation is by cuttings.

IPOMŒA SETOSA.—This is a good climbing plant for an arbor or piazza. It makes a rapid growth, and the large overlapping leaves form an excellent screen and a dense shade. Mr. W. E. Britton, Horticulturist of the Experiment Station at New Haven, writes that seeds of this Brazilian Morning Glory were sown there about the middle of last May, but only a single plant escaped the attack of cut-worms. Before the first of August it had attained sufficient size to make it very attractive. The luxuriant growth, large leaves, and stem covered with bristles, combine to give it a decidedly tropical aspect. The first flower appeared the first of September, and the plant continued to grow and blossom until destroyed by frost about the middle of October. The greatest number of flowers counted at any time was forty. In shape the flower resembles that of the common Morning Glory, and is of a delicate rose-color. The flowers of this individual plant measured two and one-half inches in diameter, and the leaves were six inches across. In its native climate the leaves are said to measure twelve inches across and the blossoms four inches, but it is hardly to be expected that such dimensions can be attained in the northern United States.

Cultural Department.

Some Winter-flowering Plants.

SMALL plants of *Pleroma macranthum floribundum*, in four-inch pots, are now showing their large flowers in profusion. The type, *P. macranthum*, flowers most abundantly when it gets to be a large plant, and it likes plenty of room either in large pots or planted out in a border. This variety, however, is better suited for pot-culture, and small plants six or eight inches high flower freely. The short branches have oblong-ovate acuminate leaves, and the large brilliant violet-blue flowers are nearly six inches in diameter and produced singly at the ends of the branches. Cuttings taken in spring root easily, and grown on in rich open soil soon make flowering plants. It was introduced from Brazil in 1870, but has not become common yet. The original plant here was received a few years ago from the Botanic Garden, Glasgow, Scotland.

A plant, five feet high and three across, of *Toxicophlæa (Acokanthera) spectabilis*, or Winter-sweet, has large dense sprays of white corymbose flowers, which are exceptionally fragrant at this time. It is easily grown, an excellent winter-flowering plant, and should be in every collection where odorous white flowers are wanted. The plants are grown here in an intermediate house, and in spring they are potted firmly in good rich soil. In summer they are placed out-of-doors in a sunny position, and early in the fall they are taken back to the greenhouse and placed in a position where they can get plenty of light. Before they begin to bloom, a few waterings with weak liquid-manure is very beneficial to them. Another species, *Toxicophlæa Thunbergii*, is also grown here, but is not in bloom yet.

Another handsome plant with very fragrant flowers, now in bloom, is *Osmanthus fragrans*—one plant being sufficient to perfume a whole house. It is a native of Japan and China and was brought into cultivation more than a century ago. Small plants flower very freely; but large plants, from four to six

feet high, can be grown. The shining leaves are elliptic-lanceolate, slightly serrated, and the small, fragrant, almost white flowers are borne thickly on the branches. It is easily cultivated and thrives in a temperature of forty to fifty degrees. Cuttings of the ripened young shoots root with the aid of a little bottom-heat.

Plumbago rosea coccinea is a desirable plant, and at this time is displaying its pleasing flowers. *P. rosea*, the type, is an old garden-plant, but this excellent variety is a superior plant and was introduced about thirty years ago. It makes a compact plant about three feet high, and the branches are furnished with alternate, oblong, ovate leaves. The bright red flowers are produced in large, loose terminal panicles, which

peduncles. Blue flowers are scarce at this time, and this plant is appreciated on that account. Small shoots root easily at any time; but if rooted early in spring they are more useful for the garden in summer. Although it is so easy to grow, and has been in cultivation a long time, yet it is very seldom seen.

Impatiens Sultani and its varieties are exceptionally easy to grow and are everlasting bloomers. A batch of plants, raised from seed received under the name of *Sultani hybrida*, are flowering very freely now. The habit and growth of the plants are similar to those of the type; but the flowers are quite distinct. Many of them have very pleasing shades of color.



Fig. 8a.—*Quercus Texana*.—See page 514.

are showy for a long time. Young plants, grown from cuttings taken last spring, make nice flowering plants now. They require to be grown in a warm, moist house and given a position where they can get plenty of light.

The Blue Marguerite, *Agathæa cœlestis*, is a valuable plant for the flower-garden in summer. When signs of frost appear it can be taken up and potted; it will then make a handsome plant for the greenhouse, where it blooms more or less all winter. It is a low plant, growing about a foot high, and its branches are clothed thickly with small dark green leaves, ovate in shape and rough to the touch. The pretty blue, daisy-like, flower-heads are produced singly on long

Impatiens Hawkeri is a beautiful Balsam which was introduced from the South Sea Islands a few years ago. It is a bushy, soft-wooded plant, well furnished with ovate, acuminate, slightly serrated leaves, which are opposite or whorled, about four inches long and two broad. The very showy deep carmine flowers are borne on long peduncles, and are produced singly from the axils of the leaves. This is an excellent plant, and deserves to be more plentifully grown. It is easily raised from cuttings in spring or summer. The plants rooted in summer give more flowers in winter than those struck early in spring. It thrives best in an intermediate temperature.

Botanic Garden, Harvard University.

Robert Cameron.

Achimenes.—III.

PATENS VARIABILIS, *Patens major*, *Boeckmani rubida* and *François Cardinaux* are four names, but they apply to a single variety of *Achimenes*, and that a very good one, strong in growth and producing great numbers of lively rose-purple blossoms. No variety, so far as I know, gives more numerous flowers. *Perlata*, as I have it, is the same. I procured it from Van Houtte many years ago, but his last catalogue describes it as "ashy." These are all flat-flowered, much like the varieties of *A. longiflora*. *A. grandiflora* (*B. M.*, t. 4012, *Bot. Reg.*, xxxi., t. 11, both incorrect in color) is not very different from *Patens variabilis*, named above; it is, however, distinct enough to be worth growing. It is bright rose, without any trace of purple. The *Kleei* of *Par-ton's Magazine* gives the color of *A. grandiflora* perfectly. "Ghiesbreghtii" is simply a synonym; *Stella* and *Chelsoni* are indistinguishable from it. *Carl Wolfarth* is a violet-shaded variety of it, and so is *Louis van Houtte*. *Carl Wolfarth* is the better of the two. *A. grandiflora flore pleno* is what its name denotes; a more ragged, untidy, disagreeable flower would be hard to find.

Masterpiece is one of the very best varieties in every respect. Its somewhat trumpet-shaped flowers are bright rosy violet, with a pure white throat. They are produced in great numbers, and contrast beautifully with the vigorous bronze foliage. Admiration is the same thing exactly. Perhaps two growers produced this variety, and each was unwilling to discard so fine a kind.

Achimenes Georgeana (a true species) and its varieties *Splendens*, *Gigantea*, *Fulgens*, *Discolor* and *Leopard* are six names for five kinds, but all, though distinguishable from each other, so much alike that one of them is enough, and that one should be *Fulgens*, which is the same as *Discolor*, a strong-growing erect kind with bronze foliage and large trumpet-shaped flowers of rich velvety carmine, shaded with orange in the centre. Some dealers sell these varieties as *Ghiesbreghtii*.

There are many small-flowered kinds which should not be passed over on account of their size, for their brilliancy or beauty of a quieter kind makes them as desirable as the larger ones. *Dazzle* is a well-known and favorite sort, and usually makes one of every group entered at exhibitions. Its flowers are bright, clear vermillion, about half an inch in diameter; its foliage dark green. *Treviriana*, *Coccinea* (figured in *Botanical Magazine*, t. 374, as *Cyrrilla pulchella*), *Splendens*, *Pygmæa*, *Diadem*, *Feuer König*, *Frau K. Schmidt*, *Harry Williams*, *Ingrami* and *Rouge feu doré* are all so much like *Dazzle* that few persons who have one of them will care for any of the others, unless it be *Frau Schmidt*, whose scarlet is of a decidedly darker shade than that of the others. Of the same general appearance as this group, but of a different color, are *Treviriana rosea*, *T. rosea magnifica* and *Gem*, all desirable. *Gem* has a salmon tinge; the others are sufficiently described by their names.

I am well aware that descriptions of varieties, if too long, are not exhilarating reading, and I fear that readers are tired of *Achimenes* by this time; but I began these papers with the ambitious design of providing a résumé of most of the varieties obtainable, and if my purchase of every sort I could find mentioned was an exemplification of the speedy sundering of the unwise person and his money, this record may prevent others from indiscriminate collecting. Another paper will finish the account.

Canton, Mass.

W. E. Endicott.

The Care of House Plants.

IN connection with an address delivered by Mr. Robert Craig, in Philadelphia, last week, on "Plants for Home Adornment, and How to Take Care of Them," a plant of *Areca lutescens* was exhibited, which has been growing in the dining-room of Mrs. John Burton for rather more than four years. This plant was picked up from the rubbish pile, where it had been thrown as worthless, because it had shown evidences of going to flower, as is sometimes the habit of this Palm, and to practical florists it is rather too slow in outgrowing the check which flowering produces. The plant is now a neat specimen some four feet high and as many in diameter; the largest leaf from where it leaves the main stem is three feet and a half long, and it has some twenty leaves now, large and small. In the summer-time it has heretofore been placed under a Grape-arbor, and some of the lower leaves show evidences of damage from the cutting winds and driving storms which we frequently get in this latitude during the summer season. The plant has received more or less water at the roots every day,

and this I consider the secret of successful plant-culture in dwelling-houses. Of course, in city residences there may be some unconsumed illuminating gas which escapes, to the detriment of plant-life, and there may be gases from the heating furnaces, which sometimes do serious damage. I am also inclined to believe that these gases receive more blame than the facts justify, and I am satisfied that the greatest trouble in the cultivation of plants in dwelling-houses is insufficient water at the roots. The serious damage is often done the first week or two after plants leave the grower. In a glass house there is considerable moisture in the atmosphere continuously, whereas in a dwelling-house the atmosphere is generally quite dry, and as a consequence there is much more evaporation from the foliage of a plant under these circumstances than there is in a greenhouse. I regret to say that florists are largely responsible for this state of affairs, because, as a rule, in a greenhouse the instructions are generally to be careful and not to give too much water to plants, and florists too often give this advice to their patrons when buying plants for use for home adornment, without taking into consideration the differences in environment. It ought to be added that Mrs. Burton's dining-room has been heated by a hot-air furnace, which furnishes conditions of dryness in the air generally considered fatal to plants.

Another thing which must be borne in mind is the temperature of the living-room, which is generally from sixty-five to seventy degrees. If the plant should occupy a position where the temperature is lower than this, less water of course will be required.

I know of another *Areca* which has been in a sitting-room in Chestnut Hill for three years, and it certainly is the picture of health. This receives water daily, because the temperature rarely falls below seventy degrees. An *Adiantum Farleyense* has been, to my knowledge, in the residence of Edwin Lonsdale since Thanksgiving Day, and it is now none the worse for the change from a warm moist greenhouse to a warm dry living-room. I also know of a *Pandanus utilis* which has been three years in the dining-room of Mr. John N. May, of Summit, New Jersey, and a more beautiful plant cannot be imagined. Every leaf is a dark glossy green, and perfect to the very tips. After breakfast every morning all the water that may remain in the glasses is poured carefully upon the soil over the roots of this plant. This is again done at noon, and once a week it is taken out for a thorough soaking with water at the roots, and allowed to remain there until the superfluous water has drained away. Windmoor, Chestnut Hill and the second *Areca lutescens* referred to, and the *Adiantum Farleyense* are in my own home.

I wish to add that in none of these cases cited do the men of the household, although practical plantmen, have anything to do with the care of the plants. A little advice may have been given in their early experience, but any counsel now offered is scorned by the good ladies of the house, who feel competent to attend to the needs of their pet plants. I have no doubt that any intelligent woman who puts her mind to it can make Palms and Ferns flourish in ordinary living-rooms.

Philadelphia, Pa.

L.

Subirrigation.—The value of subirrigation in greenhouse work is unquestioned, and it is there a perfectly practicable and feasible operation. In field-work, however, it is not so easily managed. Several years ago an experiment to determine its efficacy was started at this station. Two plots of ground, each containing four square rods, were trenched with ditches one foot deep and three feet eight inches apart. In one plot iron pipes half an inch in diameter, punctured with holes a quarter of an inch in diameter and one foot apart, were laid in these ditches. In the other plot four-inch drain tiles were laid in the same way as for underdraining. These were covered with straw before the soil was filled in. Each line of pipes was connected with a supply-pipe running along the end. This supply-pipe is in turn connected with a hundred-barrel tank, raised about ten feet above the ground. This was first put in operation in the spring of 1888, but has stood idle much of the time since. The past season it was again tried, and while the results were unquestionably in favor of the irrigated plots, when compared with those not irrigated, they were still not so marked as might have been hoped for. The difference became more apparent as the season progressed and the dry weather continued. Undoubtedly many of the pipes have become filled up, more or less, so that the water is not so evenly distributed as formerly. From fifty to one hundred barrels of water were used at each application. It will be readily seen, therefore, that the amount of water required is very considerable. Another inconvenience arises from the fact that a wooden tank like this soon dries out, so that much

water is wasted in soaking it up again, unless it is kept full all the time. This difficulty might be obviated by making a cement reservoir in the ground, however. One of the special advantages noted in favor of the irrigated plots, in the growth of tomatoes, was the decreased amount of dry-rot found on those plots. Why there should be less of this than on unirrigated land seems hard to say, but such was the fact. The plants were also much more healthy and vigorous and the fruits larger and better. Taken as a whole, however, the results do not seem to be such as to warrant the outlay required, except in very special cases where an abundance of moisture is a prime requisite, and the returns very large in proportion to the amount of land required.

Lincoln, Neb.

Fred W. Card.

Correspondence.

Chrysanthemums Naturally Grown.

To the Editor of GARDEN AND FOREST:

Sir,—If any readers of GARDEN AND FOREST besides your correspondent R. P., on page 498, have confused notions of what is meant by the phrase "naturally grown Chrysanthemums," I may be allowed to say, since my name has been referred to in the matter, that it does not mean plants stopped so that the flowers will all be on a dead level or trained into a perfect globe over which flowers of the same size are distributed at exactly equal distances, nor, on the other hand, does the phrase mean that the plants should be left to grow as they please. All cultivated plants require cultivation. Most varieties of Chrysanthemums should be judiciously disbudded, but the plants should be allowed to assume a graceful rather than a geometrical form. The flowers should appear at varying heights, and no effort should be made to have them all of exactly the same size.

Cultural skill is required to raise good Chrysanthemums in this way, as well as it is to grow any other flower, but people go to exhibitions to see flowers, and not to wonder at cultural skill and nothing else. They like beauty of form as well as of color; they like plants of graceful outline better than those constrained into unnatural shapes, even though it takes great cultural skill to constrain them.

When on the subject of exhibitions I may add that these too often consist of great masses of colors produced by large numbers of enormous flowers. There may be a hundred different varieties on exhibition, but the main display usually includes less than half that number, generally of the newer kinds—the same flowers in endless combination and assortment. Now, there are thousands of varieties of widely different types, and one who has seen the regulation Chrysanthemum show, with its meagre offering in the way of variety, feels little desire to make a second visit. To make these shows successful they ought to broaden out so that we can see other Chrysanthemums than the few kinds which interest the professional grower in a particular season.

I am not very familiar with the hyperborean climate of Boston, but R. P. need not feel any commiseration over Chrysanthemums shivering in this latitude on a frosty morning. I have proved, year after year, that great satisfaction can be found in outdoor Chrysanthemums. When the right kinds are grown properly they enjoy a little frost as much as a man does, and are by no means inclined to wilt under it. My first note to GARDEN AND FOREST, in its first year, was on open-air Chrysanthemums, and I have no reason to change the views then expressed. It may be difficult to retain the lower foliage of plants in the open, though the stems will be sufficiently clothed, nor will there be any difficulty in securing flowers large enough to be beautiful, although they may lack depth since chilling weather while the flowers are expanding may make it necessary to keep them rather dry. This depth of flower is secured readily in plants grown under glass, but it is usually at the expense of other desirable qualities. Skilled growers produce in an incredibly short time flowers which are marvels of size and apparently of fine substance. But the truth is, that many of these flowers are not worth the labor expended on them because they have no lasting quality. Fugacious flowers are often worth much care in cultivation, but Chrysanthemums ought to be durable. When properly grown and cut, when perfect, they should last in an ordinary living-room for a fortnight or longer. Average greenhouse flowers do not last over two days at a show, and there would be few prizes to distribute if the flowers were judged at the end, instead of the beginning, of the exhibition. Of course, there are good growers who produce firm flowers, but I observed that most of the flowers carried away from an exhibition which I

recently attended were carefully wrapped in paper to protect them from the wind. The friends who used to carry away my flowers grown out-of-doors never needed to take these precautions, nor did they distribute the petals of the flowers along the wayside.

Many of us are not able to have all the glass houses we want. When we cannot have greenhouse room for our Chrysanthemums we must try to make the culture of them in the open air enjoyable. Certainly it is possible to do this, and I really know no plant which at so little expense will give better results with intelligent cultivation, although to afford the occasional protection needed may tax one's ingenuity and energy to the utmost. Of course, open-air cultivation of Chrysanthemums, where flowers are grown for profit, is wasteful, for there always comes a night in late November when the glory is sure to vanish. By this time, however, the amateur will be surfeited, and will privately bless the frost.

Elizabeth, N. J.

J. N. Gerard.

Planting Trees for Autumn Color.

To the Editor of GARDEN AND FOREST:

Sir,—I wish to say a word of approval for the suggestion in your issue of November 28th, that nurserymen should propagate trees which show the brightest colors. This practice, if adopted, would be of great value to those who live in severe climates where the Liquidambar, the Japan Maples and other trees which turn to most attractive colors in the fall, do not thrive. If a person who desired to set out an avenue of Maples, for example, could obtain from a nurseryman trees in which an average of ten per cent. would produce fine autumn coloring, this would be a great advantage. I have in mind an individual Hard Maple-tree that is not only extremely brilliant in its coloring, but it is actually the first tree in its neighborhood to turn—that is, one side of it turns brilliantly while the other remains green. Its early color may be accounted for by the fact that it stands on the dry side of a ravine where it may ripen earlier than its neighbors. But why one side should turn and the other should not seems to prove that the peculiar power to change to brilliant colors is inherent in the leaf-buds and might be perpetuated. I hope to plant some Hard Maples as street-trees next spring, and I would pay a liberal premium on each tree if I were sure that I could obtain specimens which would color well.

Chicago.

W. C. Egan.

Recent Publications.

Lehrbuch der Botanik für Hochschulen. Von Dr. Ed. Strasburger, Dr. Fritz Noll, Dr. Heinrich Schenck und Dr. A. F. W. Schimper. Jena, Gustav Fischer. Pp. 558, 8vo, fig. 577.

The names of the authors would lead one to expect a work of unusual importance for teachers and students. The expectation is fully confirmed by an examination of the book, which has just appeared. It is intended for "Hochschulen," but that term, it should not be forgotten, is not to be translated literally by our words "High Schools," which are something different. The Germans, in speaking of their high schools, refer to the universities, not to the gymnasia, which correspond to a great extent to our high schools. In the present treatise we have a very valuable general presentation of all divisions of botany, which will be of the greatest service to all teachers, and to the students in our universities and technical schools. The chapter on general morphology are by Strasburger; those on physiology by Noll; those on Cryptogams by Schenck, and those on Phanerogams by Schimper. These are all recognized masters in their respective fields, and it is safe to say that, since the appearance of the different editions of Sachs' *Lehrbuch*, no general treatise on botany has appeared in which the subject has been so thoroughly and comprehensively treated as in the present work. A comparison with Sachs' *Lehrbuch* will show how great has been the advance in botany in recent years. The book presents a very attractive appearance; the text is well printed, there is a full index, and the figures are excellently drawn. In some of the figures of Phanerogams colors have been used with excellent results, and one is surprised that such results can be obtained at a cost which makes it possible to insert them in a textbook which must necessarily be offered for sale at a comparatively low price.

Notes.

Neat little plants of the Japanese Kumquat are becoming popular for holiday decoration. They are quite as handsome as the Otaheite Orange, but the fruit is so palatable that it is not likely to remain so long on the plant.

Mr. Robert Douglas writes that Black Walnut-trees, when set thinly in a plantation of *Catalpa speciosa*, made as rapid upward growth as the *Catalpas* until they reached a height of thirty feet, while in a small block planted of Black Walnut exclusively the trees at the same age were not twenty feet high.

The annual meeting of the American Forestry Association will be held at the Department of Agriculture, in the city of Washington, on Friday, the 28th of December. In the evening, Professor N. S. Shaler, of Harvard University, will deliver an address on the Economic Aspect of Erosion before a joint meeting of the Forestry Association and the National Geographical Society.

The Baldwin is the great commercial apple grown in southern New England, with the Rhode Island Greening and Northern Spy following at a considerable distance. In some parts of Maine, however, especially near the banks of the rivers, the Yellow Bellflower, according to the *Vermont Farmers' Advocate*, is a great success. The fruit from a Bellflower orchard at South Gardiner, Maine, rarely brings less than five dollars a barrel for the first quality, which is scarcely less than prices for extra Newtown Pippins. Large, highly colored Baldwins from the same region bring much smaller prices.

The so-called Apple-scab is one of the serious pests of American orchards, not only because it causes misshapen and undeveloped fruit, but because the affected trees suffer from defective foliage. When it is remembered that the fruit-buds of one year are all started the year before, the necessity for healthy foliage every year is apparent, and it is plain that the fungus should be kept from trees on the off years as well as on the bearing years. We have often given accounts of the effectiveness of the Bordeaux mixture against this disease, but it is a matter which every one ought to understand. Some late experiments made at the Agricultural College of Missouri seem to show that the weaker solutions were about as effective as the stronger ones, and that the first spraying should be given very early, and be followed by at least three others. The second crop of scab, which appears on late apples, like the Jennetings, seems in this case to have been entirely prevented by spraying.

A late bulletin of the Alabama Experiment Station reports some results obtained by Professor E. H. Mell, in crossing different varieties of Cotton for the purpose of improving the fibre. His investigations have convinced him that the different varieties of cotton now cultivated have been developed by intercrossing some seven species of the genus *Gossypium*. These species have been blended so that the distinctive characters of each have been so concealed in the different kinds of upland Cotton that it is almost impossible to trace them. The experiments show that crossing varieties in nearly every case improved the condition of the fibre, and in some individual instances remarkably so. The good properties aimed at are complete maturity throughout the length of the fibre, uniform twist from end to end, uniform width in all its parts, maximum length and purity of color. A cross between the varieties *Barnet* and *Peerless* showed a great increase in the number and weight of the seeds, as well as in the weight of the fibre, and other good qualities. These experiments are interesting, not so much for what they have directly accomplished in producing improved strains of cotton, but in pointing out what can be hoped for by a course of judicious and persevering cross-fertilization.

Mr. R. A. Rolf writes in the last number of the *Orchid Review* that a curious *Catasetum* has lately appeared in four or five different collections in England, which has the general appearance of a yellow *C. macrocarpum*, but with a much more expanded lip. In one or two instances the plants had been purchased as *C. Bungei*, but one of these plants which flowered with Messrs. Hugh Low & Co., presented certain features which led to the suspicion that it was a natural hybrid between that species and *C. macrocarpum*. Soon after a remarkable group was exhibited by Messrs. Linden, of Brussels, including a series of curiously intermediate forms which are evidently natural hybrids between the two species named, which occur in the same district. These plants were exhibited

under different names, but all of them seem to have originated in the same way, and thus they may be considered as varieties of one hybrid for which the name of *C. splendens* is retained. These forms, together, represent almost a complete transition series between two common, but very distinct species, among which they are found growing, and the peculiar way in which the characters are combined, some of the varieties approaching one species and some the other, while the remainder present combinations of the two, compels the conclusion that they must have arisen by intercrossing through insect agency.

During the holiday season one can hardly find a more beautiful or fragrant spot in this city than the stores where the choicest and rarest fruits are sold. Many of these fruits are not only singularly attractive, but they are most skillfully and tastefully grouped. Among the oddities are Indian figs, which are offered at fifty cents a dozen, and very attractive they are in appearance. They are really prickly pears from the West Indies, and although they may sell more readily under their trade name, they are no more grateful to the palate. Spanish pomegranates are worth fifty cents a dozen, the best Florida grape-fruit a dollar and a half a dozen, and Tangerine oranges, two or three attached to a leafy branch a foot long, look very attractive, and sell for \$1.50 a dozen. Imported Gros Colman grapes are worth \$2.50 a pound, the same variety from American glass houses costing two dollars. A few peaches from California which have lingered along in cold storage are offered for twenty-five cents each, but are worth nothing except to look at. Good Almeria grapes are expensive, but fair Catawbas can be had for twenty-five cents for a five-pound basket. Selected apples and pears command almost any price, according to the perfection of their form and the texture and complexion of their skin. Some of the Lady-apples and Forelle pears are almost too handsome to eat, and fine Easter Beurre pears bring three dollars a dozen.

The brisk sales of Christmas greens during the past fortnight were in marked contrast with this trade a year ago, and roping, which then was unsalable at the losing wholesale price of one cent a yard, was this season quickly bought up at five times that price. Standing Pine or Ground Pine was scarce, owing, it is said, to heavy snows in New Hampshire and Maine, and Hemlock, Spruce and *Kalmia* were largely used to take its place. The steamer *Magenta*, from Keyport, has daily brought a full cargo of roping and made pieces, such as wreaths, horseshoes, stars and hearts, and in even larger quantity branches and tree-tops of holly, profusely berried. The holly, packed in small bunches, larger bundles and bales and in barrels and boxes, was in greatest demand, and was altogether most showy and beautiful, the berries being unusually large and thickly set, and the foliage particularly green and glossy. This rich and brilliant natural coloring made dyeing unnecessary, and the artificial greens and crimson of former years were almost unseen. *Pipsissewa*, box-wood, lichens, life-everlasting and bitter-sweet berries entered into the designs, which were in very large supply, and brought, comparatively, the lowest prices, holly wreaths selling from twenty to seventy-five cents a dozen at wholesale. Some mistletoe is brought here from the southern states, but the greater portion is imported from France.

The report of the Valley Forge Commission for 1894 contains a map on which is indicated certain ground which it is recommended to add to the park, amounting in all to some two hundred and fifty acres, and among other things to provide for a broad avenue along the outer line of the camp, where nine of the fourteen brigades, that wintered in Valley Forge, were stationed. This avenue would not only mark out the line of the camp, but afford an opportunity for the colonial states to mark the camps of their respective troops. Since the law under which this was made the property of the state requires that the fortifications and their surroundings should be maintained as nearly as possible in their original condition as a military camp, the report recommends the laying out of paths and roads in such a way as to make the retréachments and redoubts accessible. The commissioners believe that with the boundaries enlarged there will be little difficulty in securing the interest and attention of the states through their several constituted authorities to this historical spot, and that the nation will erect on the summit of Mount Joy, which is within the second line of entrenchments, a high battlemented tower surmounted by a bronze figure of a private soldier of the Revolutionary army. From the summit of such a tower the whole camp-ground and its surroundings could be seen, and it would be a landmark visible from any direction several miles away.

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